

SUBJECT TO OVERFLOW: THE HISTORY OF DRAINAGE DISTRICTS IN
JASPER COUNTY, IOWA

A Thesis
by
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ABSTRACT

SUBJECT TO OVERFLOW: THE HISTORY OF DRAINAGE DISTRICTS IN JASPER COUNTY, IOWA

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This project looks at the environmental changes wrought upon the South Skunk River in Jasper County, Iowa through stream channelization, or artificial straightening of a natural watercourse. Between 1912 and 1915 the Skunk River in Jasper County was straightened so that excess water in the lowlands could drain away more efficiently, making the river's perpetually wet and flood-prone riverbottom lands much more inclined to produce large yields of grain. Draining lowlands was accomplished through the local organization of a drainage district, which gave landowners a legal way to pursue large scale drainage projects. Technologically, a steam powered dredge boat physically altered the river's riparian environment. Large-scale drainage projects like the straightening of the Skunk River were done only after the drier uplands were under cultivation.

The lasting impact of drainage was an obstruction of the environmental diversity between upland and lowland wet prairies that existed prior to cultivation. Today, the incredibly uniform landscape of Jasper County's neatly arranged fields supports the

commonly accepted perception of the American Midwest as an environmentally monolithic region. Some features of the pre-cultivated wet prairies persist into the present day, of which seasonal flooding is the most notable. Despite concerted human efforts to drain excess water from the lowlands around the Skunk River, the riparian environment there is still subject to overflow. Compared to pre-cultivated wet prairies, the Jasper County landscape is under a much higher degree of human manipulation because of drainage and stream channelization, and riparian features that resisted those efforts link the region's environmental past to the present day.

DEDICATION

To my parents, Mark and Gaylene Otto, for their constant encouragement.

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CHAPTER 1: SUBJECT TO OVERFLOW: AN INTRODUCTION

Whole or part of the following described sections...and other lands not enumerated are subject to overflow and are too wet for cultivation, and the public health, benefit utility, convenience, and welfare will be promoted by establishing a drainage district and by draining, ditching, tiling, leveling, deepening, widening and improving or strengthening the same or by changing the watercourse thereof.

-Legal rhetoric used to establish a drainage district in the state of Iowa, from petition filed in 1909 for the Skunk River Ditch¹

On a mid-November morning in 1909 a large group of landowners from Jasper County, in central Iowa, walked into their county courthouse and filed a drainage district petition. They had worked diligently in the previous months to gain the support of enough landowners in the proposed district and on that day their work came to fruition. All petitioners owned farmland around the South Skunk River, a muddy waterway that lazily meandered its way through the county for nearly forty miles.² The petitioners proposed to straighten out, or channelize, the river into a “ditch” nearly half the distance of its original length.

¹“Petition for Drainage District and Drain,” filed November 1909, *Drainage Records Book No. 1*, Jasper County Recorder’s Office, Jasper County Courthouse, Newton, Iowa, 74.

²“Engineer’s Report,” filed July 1911, *Drainage Records Book No. 1*, 84-93.

This project explains how and why the Skunk River in Jasper County, Iowa was straightened. The existence of commercial farming, and a landscape conditioned for that purpose, in the wet prairies of the Upper Midwest was the result of an environmental transition. In Jasper County that transition peaked around 1900, when only a tiny fraction of land remained unimproved for farming. The few tracts of land not under the plow were located in environments like the swampy bottoms of the South Skunk River. Less “readymade” for farming, the wet lowlands required more investment of capital before they could reliably grow crops. Draining excess water from the bottoms then, was the final step in the transition away from a diverse wet-prairie landscape and towards the uniform environment of neatly arranged fields commonly perceived as the defining feature of the American Midwest.

Using the South Skunk River in Jasper County, Iowa as a case study, this study will explain how and why wet prairie bottom lands in the Midwest were altered by humans seeking control of the region’s riparian features. Prior to channelization the Skunk River bottomland was perpetually wet, swampy, and more difficult to farm than anywhere else in the county. The persistent prospect of floods meant putting the land under cultivation was a risky investment, and for that reason many farmers used their bottomlands for grazing animals or growing hay. Those who did make improvements to the incredibly rich soil could be rewarded by bonanza yields one year, but the next year see entire fields washed away.³ By controlling flooding in the lowlands, the land could be farmed like any piece of upland ground. Those who succeeded would produce more grain, make more money, and enjoy a better quality of living.

³*Newton (IA) Journal*, “Local Items,” June 3, 1908.

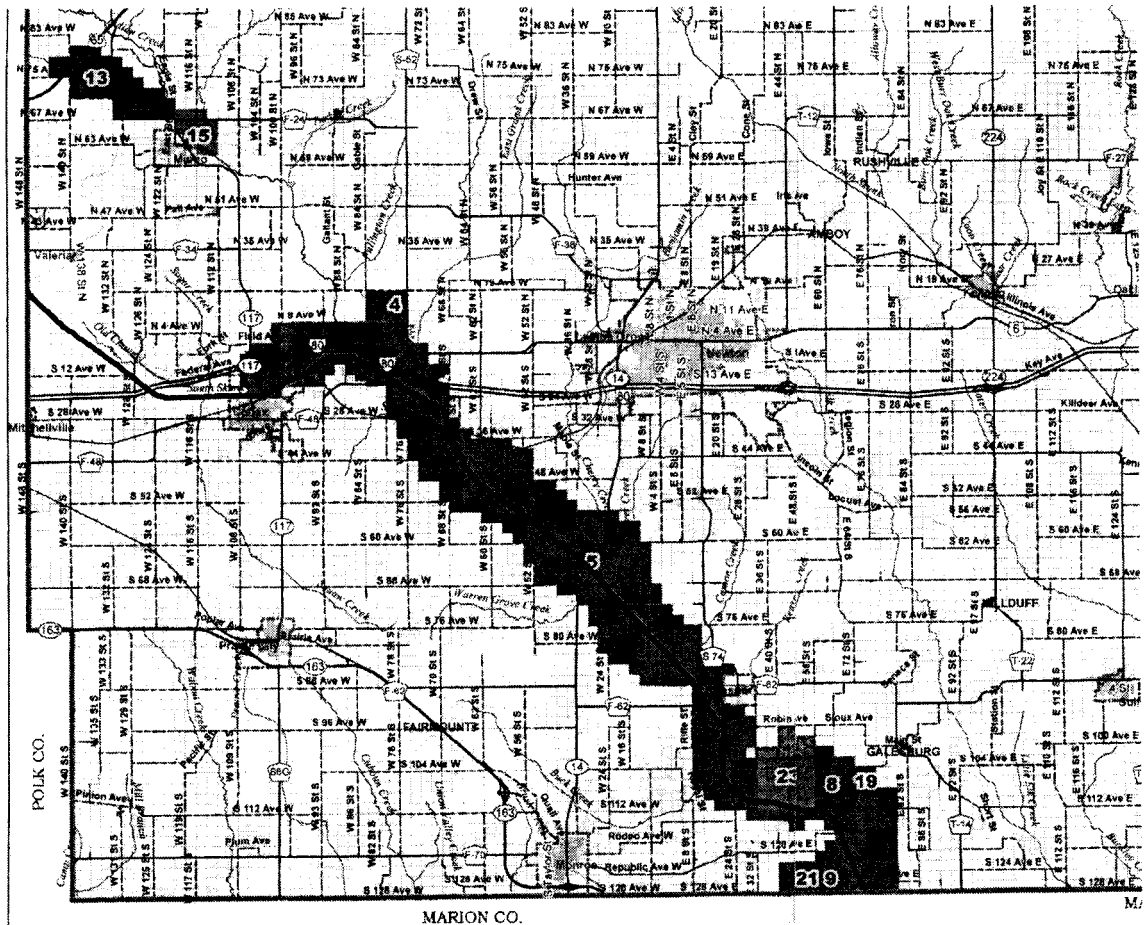


Image 1: "Jasper County Drainage Districts, 2011." South Skunk River highlighted in black. Between 1912 and 1915 the natural watercourse of the South Skunk River in Jasper County was straightened into a ditch. This was done through the establishment of a drainage district by people that owned land adjacent to the river. The Skunk River Ditch, or Drainage Ditch No. 5, is the largest drainage district in the county. On the above map the drainage district is highlighted and marked with a "5."

"Jasper County Drainage Districts," Jasper County Recorder's Office, Jasper County Courthouse, Newton, Iowa, 2011.

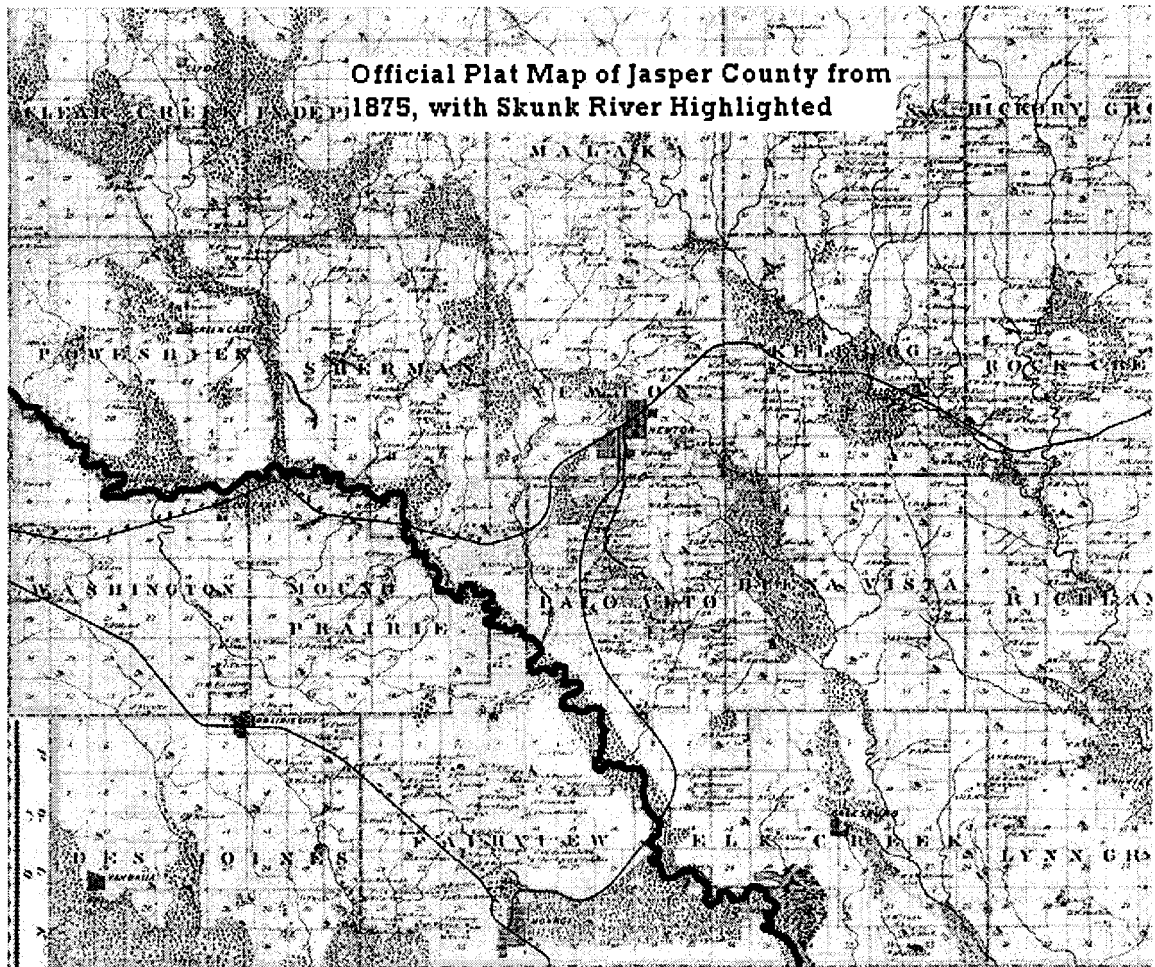


Image 2: "Plat Map of Jasper County, Iowa, 1875." Channelization involves removing a river's natural bends. A comparison of Images 1 and 2 illustrate the change in watercourse that occurred as a result of channelizing the South Skunk River. From 2011, Image 1 depicts the Skunk in its current, straightened state. Dated from 1875, nearly thirty years before the organization of Drainage District No. 5, Image 2 shows a much more crooked river. Prior to channelization the South Skunk River meandered for over forty miles through a wide, flat riverbottom. Highlighted in black, the length of the river's natural watercourse was shortened by approximately half.

"Plat Map of Jasper County, Iowa, 1875," Jasper County Recorder's Office, Jasper County Courthouse, Newton, Iowa, 1875.



Image 3 (top): "Plat Map of Jasper County, Iowa, 1875." Showing a pre-channelized river.

"Plat Map of Jasper County, Iowa, 1875," Jasper County Recorder's Office, Jasper County Courthouse, Newton, Iowa, 1875.



Image 4 (bottom): "Plat Map of Jasper County, Iowa, 1914." The same portion of river from Image 3, but from 1914, when the river was being straightened. A dotted line labeled "Skunk River Ditch" indicates the river's new channel.

"Plat Map of Jasper County, Iowa, 1914." Jasper County Recorder's Office, Jasper County Courthouse, Newton, Iowa, 1914.

From a geographic perspective, Jasper County is entirely composed of wet prairie. Historian Allan Bogue defined the wet prairies as a peninsula in the upper watershed of the Mississippi River, “that projected eastward into the wooded ramparts of the Lake Plains and the drainage basin of the Ohio River,” essentially covering all of the state of Iowa and most of Illinois.⁴ Drainage geographer Leslie Hewes defined the area as a “continuous arc from southeastern Michigan and northwestern Ohio, through Indiana, Illinois, and Iowa to the northwestern corner of Minnesota.”⁵ Both Bogue and Hewes saw the grass prairies east of the Missouri River as a single geographic entity.

Bogue and Hewes represent an earlier generation of historians that embraced the aforementioned geographic definition. Scientific and historical analysis done after 1960 has added more environmental complexity to the terrain. A revised definition comes from drainage historian Hugh Prince. Prince differentiated “wet prairie” from “dry prairie” by its high drought resistance and consequential poor drainage, but also admitted that a sharp line could not be drawn between the two. He said, “Little prairie is dry all the time, little is wet all the time, but most is waterlogged for some time almost every year.”⁶

This study defines a wet-prairie as an environment once dominated by grassland but now under heavy cultivation, composed of highly fertile soil that remains perpetually wet without the aid of artificial drainage. In their unaltered state, wet-prairie lands are poorly suited for commercial agriculture, but through artificial draining they can be transformed

⁴Allan Bogue, *From Prairie to Cornbelt: Farming on the Illinois and Iowa Prairies in the Nineteenth Centuries* (Chicago: Quadrangle Books, 1963), 1.

⁵Leslie Hewes and Phillip Frandsen, “Occupying the Wet Prairie: The Role of Artificial Drainage in Story County, Iowa,” *Annals of the Association of American Geographers*, 42, no. 1 (March 1952): 24-50.

⁶Hugh Prince, *Wetlands of the American Midwest: A Historical Geography of Changing Attitudes* (Chicago: The University of Chicago Press, 1997), 56-60.

into some of the world's most productive farmland. Between 1870 and 1920 drainage of wet prairies occurred with great frequency in the states of Ohio, Indiana, Illinois, Iowa, Wisconsin, Minnesota, and Missouri. The history of drainage and the resulting environmental transition remains largely untold, and this project seeks to tell that story.

The methodological approach to this work is the reconstruction of a historical narrative using primary sources. Newspaper articles and official county drainage records provide a timeline of events and describe the people involved. Local newspapers like *The Newton Daily News*, *The Newton Journal*, *The Colfax Clipper*, and *The Jasper Free Press* all provide critical information about how the people of Jasper County interacted with the Skunk River. Successful fishing trips, picnics, floods, Fourth of July celebrations, flood damage, a drowning, and indeed a wide variety of local happenings were reported in the newspapers.

County drainage records explain how the people of Jasper County executed their plans. Strict legal procedures were followed and many steps had to be taken before a dredge boat could start chewing away at the landscape. Petitions, engineer surveys, public hearings, value assessments, bond auctions, and collection of funds were all included in the drainage records. Additionally the specific pieces of land and who owned them were also recorded. The drainage record books indicate who wanted to drain land and why, who did not and why, and who facilitated the process.

Source material specific to the exact time and location of the Skunk River Ditch is limited by time of human settlement in that area. In order to explain what the land's riparian environment looked like prior to settlement and cultivation by Euro-Americans it

was necessary to include accounts of explorers and travelers. French Jesuit missionaries and voyageurs first documented rivers of the wet prairies, and their sketches are the earliest records available for analysis. Accounts from as early as Jacques Marquette's 1673 voyage down the Mississippi River begin the long written narrative of environmental change that spans over three hundred years.

The state of Iowa leads the nation in agricultural production, and its environment is commonly perceived as rural, remote, and much less developed than crowded, polluted, areas of urban industry. Ironically, meticulously organized rows of corn and soybeans require an incredible amount of human manipulation to maintain and in no way resemble a "natural" landscape. Like views of American industrial centers, twenty-first century perceptions of wet prairie landscapes are a result of major technological, mechanical, and scientific progress of the twentieth century.

William Cronon's *Nature's Metropolis: Chicago and the Great West* stands as a leading example of historical scholarship that contextualizes the rise of Midwestern agriculture with the broader, modernizing developments of the late nineteenth and early twentieth century.⁷ Breaking with the commonly held notion that urban and rural environments exist in opposition one another, he argues complex linkages between city and country better explain their respective development. Grain and livestock from Illinois, Iowa, Wisconsin, and Minnesota funneled into Chicago where elevator operators and agents on the Board of Trade converted it into capital; tools to help the farmer were then shipped back to the countryside in form of more efficient machinery, improved farming

⁷William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton & Company, 1991), xv.

techniques, basic amenities for living, and access to credit that allowed all of it to be purchased.⁸

Although Cronon's thematic linkage of urban and rural interests applies to the rise of the city of Chicago commensurate with the rise of Midwestern agriculture, the idea can be accurately applied on a smaller scale. Newton, Jasper County's seat of local government, was of course no Chicago, but it was a major manufacturing center with several railroad connections, including one to the grain elevators and stockyards of the Windy City. Just as Cronon's "Great West" rose to agricultural prominence with the assistance of industrial goods that flowed through Chicago, commercial agriculture in Jasper County depended on Newton's full complement of manufactured products for success.

Like *Nature's Metropolis*, much of the historical scholarship on Midwestern agriculture focuses on what happened to land, which implies the application of artificial drainage but neglects any explanation of its complexities. The history of land use is of critical importance when looking at the development of large-scale commercial agriculture, but it does not illuminate the entire picture. Just as rain is needed to grow crops in the soil, the history of water usage is equally important for understanding the development of Midwestern agriculture. This project shifts some of that focus away from land and on to water.

Although less common than agrarian historical scholarship, a handful of historians have looked at riparian, or water and wetland focused, histories. Donald Worster's *Rivers*

⁸Ibid., 257.

of Empire: Water, Aridity, and the Growth of the American West stands out as one such work.⁹ Worster examined the unique history of human-riparian interaction in terms of irrigation in the western United States. Irrigation projects increased agricultural productivity of land once unsuitable for intensive farming. California's Imperial Valley experienced a rapid rise to prominence as the arid region's dominant agricultural producer. The irrigation projects undertaken in the West became so complex and expensive that only the federal government had the resources to accomplish them. For Worster, each increasingly complex attempt to shape the environment resulted in a social reshaping of equal size and scope.

His argument aligns to the area studied in *Rivers of Empire* but falls apart if applied to other environments. Water was a commodity that created wealth, and the means to control that commodity structured the society around its use. His argument, however, is region-specific and does not adequately explain all aspects of human-riparian interaction. Most notably for this project, flood control is not assigned any agency in *Rivers of Empire*, and Worster even goes as far as to dismiss the topic of flooding as a meaningful interpretive theme:

Unlike flood protection, [irrigation] leads in all cases to a communal reorganization, to new patterns of human interaction, to new forms of authority. The difference is between holding an umbrella over your head when it rains and making the rain go somewhere else. The first is a momentary defense, the second a concerted attempt to control and defeat a threat once and for all.¹⁰

⁹Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Oxford University Press, 1985), 4.

¹⁰*Ibid.*, 20.

Contextually his point of view makes sense, as giving any agency to human attempts to control flooding discredits his principal argument. This is not a problem of content, but rather one of perspective. Worster's narrow concept of flooding fails to recognize the significance of large-scale drainage projects akin to the wet prairies of the Upper Midwest. In other words, Worster identified a region-specific trend in water control that does not explain human-riparian interaction in non-arid environments.

Both *Rivers of Empire* and this project look at human interaction with water on a regional level. Water is a commodity for Worster's irrigated West, but in the drained Midwest, water is a liability. Flood control efforts of farmers, public officials, and businessmen were much more complex than Worster's dismissive interpretation of "holding an umbrella over your head when it rains."¹¹ Much like federal projects described in *Rivers of Empire*, controlling overflow in the riverbottom required concentrated capital, complex technology, and a centralized public administration.

While major irrigation projects were federally operated by the Army Corps of Engineers, most drainage projects happened at the county level. Landowners footed most of the bill, private ditching companies did the work, and local officials managed the whole process from the county courthouse. The end result, then, was not a centralized power structure but rather a decentralized authority in the hands of property owners. One decidedly unique aspect to this study is that all the environmental alterations were organized, funded, and executed by local people.

¹¹Ibid.

The bulk of historical scholarship addressing human-riparian interaction focuses on irrigation in the American West. The overt and tangible nature of irrigation projects is one explanation for this. Leslie Hewes and Phillip Frandson articulate this point in their 1952 article “Occupying the Wet Prairie: The Role of Artificial Drainage in Story County, Iowa.”¹² The purpose of irrigation is to create differences in the landscape while drainage seeks to reduce those differences. Irrigation works properly when the ditches flow with diverted water and the arid landscape they feed becomes a well-watered garden. Drainage, on the other hand, works behind the scenes, functioning properly when the land appears completely uniform and without any visible evidence of the mechanisms designed to control it. Indicative of trends in the scholarship, irrigation is more easily seen and written about than drainage.

A second explanation for the focus on irrigation can be found in a historiographical trend called the “declension narrative,” which is the examination of a human/environment relationship that focuses on consumption and degradation of the landscape. The philosophical root of any declension narrative is the idea that humans are separate from the natural world and any influence they have on it is negative. William Cronon sums up this observation in his article “The Trouble With Wilderness; or Getting Back to the Wrong Nature.”¹³ The perception of “wilderness” as a natural place untouched by human perversion views histories of land use as tales of exploitation and decline. Cronon argues that the idea of “wilderness” is a human construct unique to “very particular

¹²Hewes and Frandson, “Occupying the Wet Prairie,” 24-50.

¹³William Cronon, “The Trouble With Wilderness; or Getting Back to the Wrong Nature,” from *Uncommon Ground: Rethinking the Human Place in Nature*, edited by William Cronon (New York: W. W. Norton & Company, 1996), 69.

human cultures at very particular moments in human history,” and that the natural world “could hardly be contaminated by the very stuff of which it is made.”¹⁴ Supporting the view that humans are a part of nature and not placed above it in a hierarchical relationship allows the academic to assign equal historical agency to the natural world, thus directing the scholarship away from the declension narrative and toward a narrative of change over time.

Jim Sherow’s *Watering the Valley: Development Along the High Plains Arkansas River, 1870-1950* contributes another declension narrative to the scholarship on American water usage.¹⁵ For Sherow, “People in the Arkansas River Valley have seldom observed ‘stewardship’ with its implications of caring for something that one does not own. Rather, they have thought in terms of the commodity value of the stream and how the domination of that river, especially through engineering, could increase the value of their vested property rights.”¹⁶ People viewed the environment as a commodity and did not consider the adverse effects of their actions.

Be it along the Arkansas, Colorado, or South Skunk rivers, making a living by manipulating the environment is the very purpose of agriculture. Perceptions of environmental decline are based on a “before and after” juxtaposition of human activity. Worster and Sherow argued that irrigation altered the environment in a negative way. The dry, irrigated west is vastly different than the wet, drained Midwest, and arguments that

¹⁴Ibid.

¹⁵James Sherow, *Watering the Valley: Development Along the High Plains Arkansas River, 1870-1950* (Lawrence: University of Kansas Press, 1991), 1.

¹⁶Ibid., 172.

explain the former may not apply to the latter. In other words, the complexities of water management in the Midwest are different and need their own story.

Subject to Overflow is not a declension narrative. The impact of humans on the Midwestern landscape has been so complete that one seeking a view of the tall grasses associated with a pre-cultivated, “natural” prairie must look in roadside ditches, state controlled preserves, or intentionally fallowed farmland regulated by the federal Conservation Reserve Program. But no matter the high degree of human control, to view the wet-prairies as environmentally devastated is neither completely true nor academically productive. Implied in any declension narrative is the belief that human activity ruins the landscape to a point that it cannot naturally repair itself. This project presents a narrative about environmental transition, and it is the goal of the author to allow the reader to draw his or her own conclusions about the human impact on the landscape.

Without enough water to go around an environment is much slower to grow, creating the perception that an area once sufficiently moist has been severely damaged. If people in eastern Colorado dam the Arkansas River and divert its flow to newly cultivated fields, then farmers downstream in western Kansas will notice that their fragile water supply has been severely compromised, and people further downstream in Oklahoma may have no water at all. This unfortunate situation breeds conflict and causes the environment to suffer.¹⁷ Wet prairies, while sufficiently manipulated, do not suffer from a lack of water and are capable of regenerating growth much faster than the arid prairies of the American West.

¹⁷Ibid., 1.

When irrigation canals no longer provide water to a naturally arid landscape, people used to seeing green crops in the fields start viewing the land as a barren, devastated wasteland. Ironically, irrigation efforts that increase the land's regenerative qualities are seen as natural, and the reversion back to an unaltered state is seen as an environmental decline. Perceptions of environmental degradation are not limited to stories of irrigation in the American West, but the environmental characteristics unique to that terrain make it very fertile ground for declension narrative scholars.

The Eternal Frontier: An Ecological History of North America and its Peoples, by Australian environmental historian Tim Flannery, portrays the North American continent in terms of periodic stages of transition.¹⁸ For Flannery, the environmental history of North America has undergone periods of peak and decline since before the age of dinosaurs. The regeneration of a new "frontier," or environment with unique attributes capable of consumption, followed each decline.¹⁹ Flannery's point states that the cyclical regeneration of "frontier" environments on the North American continent has been an eternal process.

Although Flannery addresses the standard declension issue of human over-consumption of natural resources, his interpretation carries a much less foreboding tone:

If the frontier dreaming of North America has to be destroyed so its environment and people can move into the future, then I'm sure it will be done. And there are signs that this is already occurring. After all, the frontier is a state of mind as much as anything, and even now the minds of its citizens are changing rapidly. Environmental protection is popular

¹⁸Tim Flannery, *The Eternal Frontier: An Ecological History of North America and its Peoples* (New York: Grove Press, 2001).

¹⁹*Ibid.*, 168.

even with some of the conservative right, and is slowly closing what remains of the land, water, timber and fisheries frontiers of North America before complete disaster ensues.²⁰

In other words Flannery identifies a continuous cycle of North American organisms successfully adapting to their environment, humans included.

This project aligns with the more optimistic philosophy of Tim Flannery. The purpose of including observations of the Australian environment within a study about Midwestern prairies is that personal experience and observation dictates how one views the environment.²¹ Flannery's perception clashes with Worster and Sherow because his outlook originates from a place completely different. Just as histories of the Australian and North American environments are different, the irrigated West and the drained Midwest have their own, unique stories to tell. The regenerative qualities of a wet-prairie environment, as indicated by the region's historical stability as an agricultural cornucopia, are the baseline evidence for that interpretation.

In recent years a few scholars have analyzed wet prairies as a distinct region. Hugh Prince's *Wetlands of the American Midwest: A Historical Geography of Changing Attitudes* identifies distinct changes in the ways inhabitants of the wet prairies viewed their environment.²² Prince explains the emergence of wetlands protection as a well-established societal norm supported by scientific research and regulated by public institutions. As a promoter of wetland preservation Prince promotes an idealistic message, but like so many environmental scholars of the twentieth century he tells a tale of decline and recovery.

²⁰Ibid., 354.

²¹Harry F. Beecher, Daniel Lunney, and Irina Dunn, eds. *Ecology in Australia: A Natural Legacy* (Sydney: Pergamon Press, 1986), 123.

²²Prince, *Wetlands of the American Midwest*, 2.

Wetlands of the American Midwest assumes that humans are the active historical agents against a passive, defenseless environment whose only possibility of survival is human “intervention.”²³ History suggests that human attempts to alter the appearance of wet prairies have been guided by a societal moral compass since the first occupants interacted with them. Prince fails to see that recent debates over wetlands protection are only the latest attempt by humans to define what the best “intervention” looks like.

The latest interpretation of wet prairies comes from environmental historian Shannon Stunden Bower’s 2011 publication *Wet Prairie: People, Land, and Water in Agricultural Manitoba*.²⁴ An environmental history of Manitoba’s wet prairies, Stunden Bower argues that the region has a complex history worthy of a fresh analysis. “The wet prairie was a distinctive landscape, with distinctive challenges for those looking to farm it.”²⁵ For Stunden Bower, drainage efforts in the wet prairies of Manitoba were the product of local circumstance, both human and environmental:

Falling short of the ideal of a permanently drained agricultural landscape had significant and long-lasting consequences for those involved in the administration of drainage. The profound irony beneath all this was that, despite the accumulating complaints of wet prairie residents and the corresponding frustration of provincial administrators, continued flooding was largely the consequence of an extremely dynamic environment. It was an environmental reality, not the product of human negligence.²⁶

Farmers and provincial officials pursued drainage because they had a particular ideal of what the landscape should look like, and their efforts were not entirely successful because

²³Ibid.

²⁴ Shannon Stunden Bower, *Wet Prairie: People, Land, and Water in Agricultural Manitoba* (Vancouver: UBC Press), 2011.

²⁵Ibid., 3.

²⁶Ibid., 18.

the environment did not allow it. Breaking with the declension narrative, Stunden Bower's analysis of the wet prairies balances human and environmental factors.

Iowa's "natural" state (endless rows of corn) is in truth completely manipulated by human hands. Drainage efforts like stream channelization represented the final, most capital intensive step in the environmental transition between a grass prairie and an intensely cultivated agricultural region.

This project's narrative unfolds into four chapters. The first is the introduction to the topic and an explanation of how water usage has been interpreted differently by historians. The second addresses legal and political mechanisms created by humans to enact drainage projects. The third chapter describes the dredging technology required to physically alter the landscape. Through the lens of the environment, the fourth chapter addresses what aspects of the river's riparian environment changed and remained the same. The project's conclusion is that although significantly altered, the Skunk River bottomlands retained many features of a wet prairie environment and human attempts to control it were not entirely successful. Highlighting that transition allows historian and reader alike to better understand the deceptively complex history of the Midwestern wet prairies.

The wet prairie features that abide into the present day are historical relics that link the region's present-day environment with a pre-cultivated past. Since initial settlement by whites in 1843 the Skunk River has shaped the development of agriculture in Jasper County. The watercourse has been altered significantly, and its marsh-like attributes hemmed in to a much smaller space, but the alterations were not complete, nor eternal.

Human manipulation of the Skunk River and its bottomlands has been substantial, but despite all attempts at control it is still subject to overflow.

CHAPTER 2: THE WILL OF THE MAJORITY

Drainage played a critically important role in the story of Iowa's historical development. Environmentally, drainage was a powerful force that gave rise to a landscape completely adapted to commercial farming. From a human perspective, draining large tracts of wetlands required the political, legal, economic, technological, and scientific contributions of many different people. Taken together, the environmental and human histories of drainage help explain how Iowa's incredibly uniform landscape came into existence. This chapter gives an overview of drainage legal history in Iowa and looks at who was involved in the establishment of the "Skunk River Ditch."

To best study the history of drainage in the Skunk River bottomlands of Jasper County scholars should analyze the events that happened between the years of 1908 and 1915. In 1908, legislators altered state law, making the organization of large-scale drainage projects easier. By 1915 the steam-powered dredge boat that physically straightened the Skunk River completed its slow trek through the county. During those seven years, the most significant alteration to the Jasper County landscape occurred, and the results of that project are still very visible in 2012.

Step one to draining land requires that the law allows such an undertaking. The legal genesis of large-scale drainage projects in Iowa happened in 1908. That year

lawmakers in the capitol city of Des Moines amended the eminent domain section of the state constitution to strengthen land-use law in favor of collective drainage efforts. Prior to 1908, the eminent domain law had remained unchanged since 1857. The original clause stated the following:

Private property shall not be taken for public use without just compensation first being made, or secured to be made to the owner thereof, as soon as the damages shall be assessed by a jury, who shall not take into consideration any advantages that may result to said owner on account of the improvement for which it is taken.¹

The 1908 amendment qualified the 1857 clause:

The general assembly, however, may pass laws permitting owners of lands to construct drains, ditches, and levees for agricultural, sanitary or mining purposes across the lands of others, and provide for the organization of drainage districts, vest the proper authorities with power to construct and maintain levees, drains and ditches and to keep in repair all drains, ditches, and levees heretofore constructed under the laws of the state, by special assessments upon the property benefitted thereby. The general assembly may provide by law for the condemnation of such real estate as shall be necessary for the construction and maintenance of such drains, ditches and levees, and prescribe the method of making such condemnation.²

The state altered its perception of private property to make it easier for farmers to drain their lands, and envisioned that the drainage district provided an institutional solution to the commonly shared problem of farming land “subject to overflow and...too wet for cultivation.”³ The passage of the thirteenth amendment to the Iowa Constitution implied that elected officials in the state were in agreement that drainage was in the best interests of the citizenry.

¹Iowa State Constitution, Article 1, Section 18.

²Ibid.

³“Petition for Drainage District and Drain,” filed November 1909, *Drainage Records Book No. 1*, 74.

In 1902 noted Iowa legal scholar Benjamin F. Shambaugh interpreted the historical significance of Iowa's State Constitution. In *History of the Constitutions of Iowa* he wrote:

History teaches that in the evolution of political institutions, customs precede statutes; written laws follow unwritten conventions; the legal is the outgrowth of the extra legal; and constitutional government is developed out of extra constitutional government.⁴

The development of drainage law in Iowa illustrates Shambaugh's point. Drainage was a customary practice of many farmers long before the amendment of 1908 was passed. By the late nineteenth century, the state had drainage laws in place, but they lacked cohesion and were interpreted differently from courthouse-to-courthouse. By 1908 the practice of draining farmland was considered standard procedure on any modern farm. As a result the common practice of nineteenth-century farmers became the constitutional right of farmers in the early twentieth century.

At the 1908 Iowa State Drainage Convention, Mr. A.J. Lilly of the northwestern Iowa town of Algona spoke of drainage law as an American tradition:

[Drainage projects] were of the highest importance to the [early American] community yet they could not be secured without some method of compelling the interested parties to co-operate. A majority of people generally recognized the importance of the work, but were unable to agree upon a plan which would meet the approval of those who were interested; hence to move forward in matters of this kind it was found necessary to have a drainage law to enforce and carry into effect the will of the majority of the land owners interested.⁵

Lilly's words effectively summarize the primary obstruction of any drainage endeavor, that of mutual agreement upon the use of private property. To drainage boosters, the drainage

⁴Benjamin F. Shambaugh, *History of the Constitutions of Iowa* (Des Moines: The Historical Department of Iowa, 1902), 30.

⁵A.J. Lilly, "Dredge Ditches," *Proceedings of the Annual Meeting of the Iowa State Drainage Association* (Ames: Iowa State College, 1908), 9.

district was the institutional solution that allowed “the will of the majority of the land owners interested” to be organized more quickly and carried out more efficiently.⁶

Drainage was not invented in Iowa, only perfected. Farmers in the eastern states had confronted drainage problems long before Iowa was ever settled by whites. Likewise, drainage was not invented in America, as European nations had grappled with the problem for centuries.⁷ The first American legal reference to drainage came from the Delaware Colony in 1772, which was promptly re-legalized after the American Revolution.⁸ Since the passing of the Delaware Colony’s law the will to drain flowed westward, gaining in expertise, and steadily increasingly in complexity. The early twentieth century drainage activity in Iowa grew out of the successes, failures, and adaptations of several generations of American farmers. When it came time to drain the wet prairies of central Iowa those interested in the process enjoyed the benefit of over a century of hindsight.⁹

The first major American publication on drainage appeared in 1859. Henry Flagg French’s *Farm Drainage, The Principles, Process, and Effects of Draining Land with Stones, Wood, Plows, and Open Ditches, and Especially with Tiles* was a “how-to” book for farmers seeking better drainage of their land.¹⁰ The techniques outlined in the book focused on small projects that a single farmer could accomplish by himself. After initial publication, reprinted editions of French’s book appeared for several decades, but by the

⁶Ibid.

⁷For more information about European wetlands history, interested readers should consult David Blackbourn, *The Conquest of Nature: Water, Landscape, and the Making of Modern Germany* (New York: W.W. Norton & Company, 2006).

⁸Lilly, “Dredge Ditches,” 9.

⁹For more information on the westward flow of drainage practices, interested readers should consult Richard Bardolph, *Agricultural Literature and the Early Illinois Farmer* (Urbana: The University of Illinois Press, 1948).

¹⁰Henry Flagg French, *Farm Drainage: The Principles, Processes, and Effects of Draining Land with Stones, Wood, Plows, and Open Ditches, and Especially with Tiles* (New York: Orange Judd Company, 1906).

turn of the century his methods were outpaced by a newer, mechanized force of drainage technology.

According to early twentieth century drainage engineer Jacob A. Harmon, the legal tradition of drainage in Iowa was based on precedents set in Illinois that moved away from English Common Law. In an article printed in the May 1908 edition of *Engineering and Contracting*, Harmon addressed the Common Law principle of “free use and flow”:

The riparian rights under the common law consist in the right of the owner of any land adjacent to a navigable stream to the free use and flow of all the waters of such stream in a state of nature, such parties being permitted to make any reasonable use of the waters of the stream, provided they are returned to the stream without impairment or change, for the similar use of the owner immediately below.

This principle has been extended under the common law practice to apply to all drainage through the natural water courses whether in large streams, small streams, or across flat prairies where there are no defined channels, so that under the common law it is impossible for any drainage to be accomplished by any individual or group of individuals except by the concurrence of all who might be interested or whose rights might become affected by the result of the construction of the drainage districts.¹¹

English Common Law obstructed drainage efforts because the authority to divert excess water onto the land of another person conflicted with the principle of “free use and flow.” Such as in the case of the 1908 amendment to Iowa Constitution, success of large scale drainage projects happened only after state lawmakers redefined land use law. The potential for litigation that surrounded redefinition of land law relegated such efforts to the county level and hindered the development of a national policy on drainage.¹²

¹¹Jacob A. Harman, “The Development of Agricultural Drainage in Illinois and Iowa- Controlling Laws, Physical Conditions, and Codes,” *Engineering and Contracting* 29, no. 20 (May 13, 1908): 296-299.

¹²In his 2010 doctoral dissertation, historian Anthony Carlson stated that in 1908, a federal policy on drainage failed to materialize, while similar efforts to irrigate land succeeded. He argued that “bureaucratic rivalries, partisan politics, [and] sectionalism” dealt a “crippling blow” to national drainage policy, keeping efforts at

Iowa's first drainage law, the *Swamp Land Grant*, was passed by Congress in 1851. At that time Iowa was largely unsettled and its lowlands of little value. Interested settlers purchased farms on the still abundant upland prairies, leaving the sloughs unsold. In a move intended to generate income for cash starved county governments, the *Swamp Land Grant* transferred that unsold bottomland to county governments for the purpose of selling them and using the proceeds for the development local infrastructure such as schools and roads.¹³ Only after more settlement reached the area did a unified drainage policy develop to foster more drainage work.

Before 1908 the drainage laws of Iowa were in a state of flux. According to drainage historian Jay Julius Sherman it was not until 1904 that any unified state policy on drainage existed. Before then, "the laws were in an extremely chaotic condition," lacked any conformity, and were administered differently across the state.¹⁴ The biggest obstacle remained securing the right to drain water onto the land of another, and to that end a lobbying group called the Iowa Drainage Association was formed in 1904. It was through the efforts of the Iowa Drainage Association that the 1908 amendment to the state's constitution was pushed through the statehouse.

The 1908 constitutional amendment ensured one's legal right to establish a drainage district, but it did not mandate that farmers would exercise that right. A typical petitioner owned significant land in the bottoms and shared a belief with other landowners that the

the state and local level. Anthony Carlson, "'Drain the Swamps for Health and Home': Drainage, Land Conservation, and National Water Policy, 1850-1917" (doctoral dissertation, University of Oklahoma, 2010), 11-12.

¹³Jay Sherman, *Drainage Districts in Iowa: A Study in Local Administration* (Cedar Rapids: The Torch Press, 1924), 10.

¹⁴*Ibid.*, 11.

land could increase in value. It is likely that prospects of major economic gains and bonanza yields were in the minds of each petitioner. Bottomland was incredibly fertile, indeed much more fertile than upland soil. Still, it had a propensity to flood, and flooding was the proverbial double-edged sword for any steward of the bottom lands. Overflow from the river enriched the soil with silt, but those who cultivated it risked losing entire fields by flooding. Cyclical flooding meant that one year the land produced more bushels per acre than any land in the county, and the next was washed away by floodwaters.

With constitutional amendment in place any landowner or groups of landowners could petition their county Board of Supervisors for the establishment of a drainage district. The Skunk River Ditch was the fifth drainage district petitioned for in Jasper County. In official records it was often referred to as “Drainage Ditch No. 5” or the “Skunk River Ditch.” In November 1909, forty-nine landowners signed the petition that established it.¹⁵

According to Jay Sherman’s 1924 doctoral dissertation *Drainage Districts in Iowa: A Study in Local Administration*, if a proposed drainage district involves the straightening of a creek or a river, then the petition must “be signed by the owner or owners of at least twenty-five percent of the acreage affected or assessed.”¹⁶ This was different than efforts to tile or dig a new ditch, which only required that fifteen percent of the land in the proposed district be owned by petitioners. Significantly less than a majority of people or land, this provision sped up the process of drainage after 1908, and the case of the South Skunk River is no exception. The district covered over 21,000 acres of land, and only a fourth of that land needed to be owned by petitioners for the project to pass beyond the first

¹⁵“Petition for Drainage District and Drain,” filed November 1909, *Drainage Records Book No. 1*, 74.

¹⁶Sherman, *Drainage Districts in Iowa*, 11.

stage. A list of eighteen petitioners who owned the most land (see Table 1) gives a clear indication of how few people were needed to establish the district.

Table 1: Petitioners Owning the Most Land in the Proposed District¹⁷

Name of Petitioner	Total Acres Owned in Drainage District	Percentage of Total (20,903 acres)
L.A. Greenlief	651	3.1
Harry Allfree	529	2.5
J.H. Tool	515	2.5
Riley Lust	416	2.0
J.W. Veach	386	1.8
G.H. Warner	348	1.7
Ed Ross	345	1.7
A.D. & A.T. Van Zante	343	1.6
Patrick Healy	276	1.3
Thomas Healy	264	1.3
C.F. Morgan & W.A. Carrier	250	1.2
Elias B. Moffitt	231	1.1
Fred Bain	222	1.1
W.E. Mercer	206	1.0
Harrison Prinder	154	0.7
Morgan Woody	127	0.6
Total	5,263 acres	25.2 %

¹⁷“Petition for Drainage District and Drain,” filed November 1909, *Drainage Records Book No. 1*, 74; “Report of Appraisers on damages and acreage in Skunk River Drainage District,” filed October 1911, *Drainage Records Book No. 1*, 109-111; “Report of Classification Commission and Appraisers,” filed April 1912, *Drainage Records Book No. 1*, 156-175.

The eighteen petitioners listed owned enough land to legally establish the district. Many more petitioners were involved, and just because someone did not sign the petition does not necessarily mean they were opposed to it. The petitioners were responsible for covering initial startup costs of the engineer's survey, tax assessments, and the salaries of any public official involved in drainage matters. Family ties among petitioners and non-petitioners complicate any attempt by the author to further explain who was in favor and who was against the district's establishment.¹⁸ The data does conclude, however, that only eighteen of 172 people, or 10.5 percent, were required for a majority.

Beyond the landowners, several public officials played a role in the district. The four most important being the three members of the Jasper County Board of Supervisors, and the county Engineer who provided the project with technical expertise. Each County Supervisor represented the interests of a different section of the county. In the early years of Iowa's past the County Supervisors wielded significant authority in the management of local affairs. Building roads or bridges, viewing fence lines, paying bounties for nuisance animals like gophers and wolves, to name a few. In essence they were a centralized authority that directed the use of private funds for any ventures deemed necessary by the local citizenry and considered legal by state law.¹⁹

¹⁸Much like any agricultural region, several members of one family could own land and operate their own farms in a locality. In some cases they cooperated with one another, in other cases they worked independently, and in others still they operated in feuding opposition. A marriage between two landowning families could also create mutually beneficial relationships among farming operations. The result is a complex web of kinship that extends far beyond the immediate family. Some of the petitioners for the South Skunk River Ditch were related to one another, and some were also related to elected officials, and non-petitioning landowners. Although important, to avoid speculation about the link between kinship ties and straightening the river, the author has omitted any interpretation of these familial relations.

¹⁹Clarence Ray Arthur, *History of Township Government in Iowa* (Iowa City: State Historical Society of Iowa, 1914), 125.

In 1911 the three supervisors in Jasper County were David Fleck, William Livingston, and Charles Sauerman. After 1881 each supervisor served a three-year term, and their tenures in office were staggered so that one new supervisor was elected each year.²⁰ Fleck came from a successful farming background and also operated a “lumber and grain business” in the small eastern Jasper town of Kilduff. Livingston, also a successful farmer, owned over 800 acres of Jasper farmland in 1912. A 1912 biography lauded Livingston for keeping his holdings “well improved and well tiled,” which suggests he strongly favored drainage districts. Sauerman was the eldest of the three and by 1910 had retired from farming after many decades of prosperity. Sauerman enjoyed purchasing farms for the purpose of improving them, then selling his holdings and starting the process over again. In addition to being in the local Masonic Lodge, he was a member of the Jasper County Agricultural Society and in 1912 served the organization as president.²¹ It is likely that the county’s Agricultural Society promoted the latest farm improvement techniques such as tiling and ditching. All three County Supervisors were prosperous farmers and businessmen whose interests reflected those of their constituency.

The County Engineer was W.F. Byers. First elected in 1881 as the County Surveyor, during his tenure of thirty-four years in public office the landscape of central Iowa transitioned from upland tallgrass prairies and wooded lowland swamps to neatly arranged fields and farms. Byers conducted all surveying work on the Skunk River Ditch as well as any other engineering work done in the county. After the Skunk River Ditch’s completion in 1915, Byers influenced the Skunk River further downstream, signing on to

²⁰James Weaver, ed., *Past and Present of Jasper County, Iowa* (Indianapolis: B.F. Bowden & Company, 1912), 98.

²¹*Ibid.*, 631, 902, and 1197.

assist the Board of Supervisors in Mahaska County with a similar ditching operation.²²

Byers not only witnessed some of central Iowa's most dramatic environmental alterations, he and his subordinates were active agents of change.²³

The flood-prone summer of 1909 did much to convince farmers that drainage was a worthwhile venture. One heavy rain in May claimed twenty-one head of cattle from one unfortunate farmer, and caused an old-timer to remark that the river was "the highest it's been in forty years."²⁴ July was even worse. Iowans saw the Des Moines River go "on a rampage" and flood several blocks of the capitol city.²⁵ On the state's western border, thousands of people in Sioux City were forced to evacuate away from a swollen Missouri River.²⁶ Beyond the borders of Iowa, flooding in Missouri claimed the lives of ten people and caused over one million dollars in property damage and crop losses.²⁷ Misfortunes to the south may have fostered sympathy from residents of Jasper County, but the tragic drowning of three young boys in the Skunk that summer was felt much closer to home.²⁸ Unpredictable flooding, such as during the summer of 1909, strengthened the view that the Skunk River needed improvement, and without the help of human intervention was a danger to people and property.

The danger flooding posed to human life and crops was one possible reason why people wanted the river straightened, but mental will did not necessarily translate to

²²*Newton (IA) Daily News*, "County Engineer Byers Resigns And Vacancy Is Filled," November 14, 1914.

²³Weaver, ed., *Past and Present of Jasper County, Iowa*, 93.

²⁴*Newton (IA) Daily News*, "North Skunk Out Of Banks," May 8, 1909.

²⁵*Newton (IA) Daily News*, "Des Moines River On Rampage," July 9, 1909.

²⁶*Newton (IA) Daily News*, "Thousands Driven From Homes By Swift Floods," July 12, 1909.

²⁷*Newton (IA) Daily News*, "Eight Dead In Flood," July 9, 1909; *Newton (IA) Daily News*, "Two Bodies Taken From River," July 9, 1909.

²⁸*Newton (IA) Daily News*, "Boy Drowned at Colfax," July 9, 1909; *Newton (IA) Daily News*, "Drowned While Camping," July 6, 1909; *Newton (IA) Daily News*, "Colfax Boy Drowns," August 16, 1909.

immediate action. Drainage projects required special machinery to physically alter the landscape and factories to manufacture it. Local Jasper County farmers did not need to look far to find that sort of technology. The county seat, Newton, was a major manufacturing center and located there was a ditching machine factory that produced and shipped ditching machines all over the world.

As early as 1856 the booster Nathan Howe Parker said of Jasper County that “there can scarcely be a question as to the profitableness of almost any branch of mechanical and manufacturing industry which may be established,” and predicted that “men of capital and true Western spirit...will render Newton quite a point for manufacturing.”²⁹ Almost in affirmation of Parker Howe’s words was local industrialist and inventor George W. Parsons, who owned and operated the George W. Parsons Company. Parsons (see Image 5) started to manufacture ditchers in 1905, but his reputation as a successful inventor dated back to the 1890s. In 1893 he patented a self-feeding grain thresher that revolutionized the threshing industry. During that same year Parsons, along with another aspiring Newton industrialist, Fred Maytag, opened a factory to produce the device. Business boomed, and in 1907 the Parsons Band Cutter & Self Feeder Company changed its name to the Maytag Company and focused on the production of washing machines.³⁰

²⁹Nathan Howe Parker, *Iowa As It Is In 1856: A Gazetteer for Citizens, and a Hand-Book for Immigrants, Embracing a Full Description of the State of Iowa*. (Chicago: Keen and Lee, 1856; Nabu Public Domain), 149.


³⁰Sam Moore, “The Maytag Company: From Farm Equipment to Washing Machines,” *Let’s Talk Rusty Iron*, February 2010, URL- <http://www.farmcollector.com/Company-History/The-Maytag-Company-From-Farm-Equipment-To-Washing-Machines.aspx> accessed on 10-15-2011; Lynn Landberg, *A Trencher Pioneer: George W. Parsons, Construction Equipment*, January 1999.



Image 5: Picture of George Parsons, circa 1908. From *Newton (IA) Journal*, "Ditcher Plant Remains in Newton," December 19, 1908.

Before entering into large-scale manufacturing George Parsons and his brother Lonny ran an implement dealership and repair shop near Newton (see Image 6). They kept costs low by building their own machines and passed that savings onto their patrons. Fred Maytag ran a similar operation that was responsible for the sale and local demonstration of highly prized McCormick reapers, binders, and mowers (see Image 7). Parsons' proclivity for technological innovation and Maytag's ability to promote and sell equipment made them an incredibly successful business team.

FOUND AT LAST!
THE WAY to SAVE MONEY.

PATRONIZE HOME INDUSTRY AND HELP BUILD THEM UP.  BUY YOUR AGRICULTURAL IMPLEMENTS OF

Parsons Bros.

— WE HAVE —

PLOWS AND HARROWS OF OUR OWN MANUFACTURE.
 And keep for sale the "New Denmark," the best Corn Cultivator made. We have everything needed to repair Farm Implements.

PLOW WORK A SPECIALTY.

We point to our past reputation as a guarantee for the future

Image 6 (top): Advertisement for Parsons Brothers shop, from *Newton (IA) Journal*, June 30, 1881.

MAYTAG & BERGMAN,
 DEALERS IN
FARM MACHINERY.

HARVESTING MACHINES,
 McCormick and Walter A. Woods.

FARM WAGONS, **CORN PLANTERS,**
 Schuttler, Moline, Ketchum and Weber. Deere and Avery.

CHEEK ROWERS, **CULTIVATORS,**
 Avery, Deere and Tait. Weir, Eagle, New Western and New Denmark.

SULKY AND WALKING PLOWS,
 Norwegian, Buford & Co.'s, Furst & Bradley, and Moline.

HALF PLATFORM SPRING WAGONS AND BUGGIES.
 Also Everything in the Line of Farm Machinery

— COAL, LIME, HAIR, CEMENT, Etc. —

Image 7 (bottom): Advertisement for Fred Maytag's implement dealership. From *Newton (IA) Journal*, June 23, 1886.

791.

G. W. PARSONS. PATENTED JUNE 16, 1908.
TRENCH EXCAVATOR.
APPLICATION FILED MAR. 5, 1906.

8 SHEETS—SHEET 1.

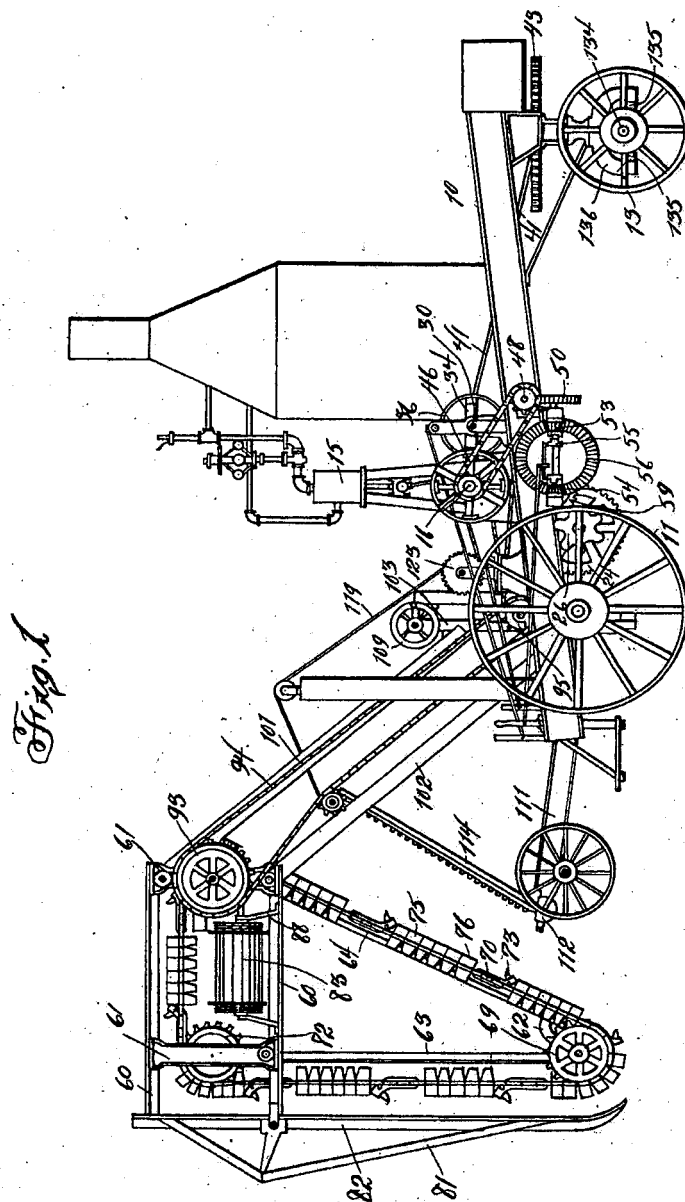


Image 8: "G.W. Parsons Trench Excavator, 1908." Shortly after securing a patent in 1908, Parsons demonstrated his new ditching machine in the Skunk River bottoms, showing farmers that drainage was possible. His ditching demonstration was the first large-scale ditching project undertaken in the riverbottom.

George Parsons, G.W. Parsons Trench Excavator, US Patent 906,655, filed on December 15, 1908.

The first machines invented by Parsons were small and designed only to dig ditches five feet wide and up to twenty feet deep.³¹ They were ideal for the construction of underground water lines and city sewer systems. To publicize the machines he and Maytag occasionally put on local ditching “demonstrations” and invited the public and potential buyers to watch the machines in action.³² Demand for the ditchers soared and Parsons constantly needed to hire more labor and make additions to his factory. In 1908 he patented a much larger ditching machine, one capable of digging drainage ditches in the riverbottom.

In July 1908 Parsons ditching technology took an active role in the promotion of local drainage. The bigger, better “trench excavator” (see Image 8) was tested on a farm south of Newton that experienced overflow problems from a nearby creek. The new machine dug a ditch eight feet wide at the bottom, sixteen feet wide at the top, four feet deep, and two miles long. The landowner spoke confidently of decreased risk of flood and increased potential to grow crops, stating “if they get four crops out of five the ditch will pay for itself easily.”³³ The newspaper article that described the ditcher’s progress astutely identified the state of public opinion in regard to the Skunk River and its bottoms:

³¹ *Newton (IA) Daily News*, “Now Ready for Shipment: The New Ditching Machine Made by George W. Parsons & Co.,” March 31, 1906.

³² *Newton (IA) Daily News*, “Big Ditcher At Work,” May 28, 1906.

³³ *Newton (IA) Daily News*, “Ditching The River Bottom: Initial Movement Begun On The Maddy Farm,” July 21, 1908.

Ditching The River Bottom: Initial Movement Begun On The Maddy Farm

The question of reclaiming the bottom lands along the Skunk River, or rather protecting them against high water and the attendant overflow is a subject which is of absorbing interest to all owners of farms along the river. The question of straightening the river channel has received due consideration, and the estimates on the probable cost have been made; but no concerted action has ever been inaugurated.

As conditions now exist the price of land on the bottoms ranges from \$24 to \$40 to \$50 to \$75, according to how much or how little the land is affected by the overflow. Everyone who knows anything about these lands knows they are very rich and on a dry season or about once in five or six years, bumper crops are raised. The rest of the time the high water drowns them out.³⁴

The ditching demonstration put on by Parsons and his new machine convinced farmers that technology had caught up with their desire to improve the bottom lands. The 1908 constitutional amendment endowed Iowa citizens with the right to drainage. Loss of life and crops during the floods of 1909 instilled in their minds that the Classic Skunk was wild, unpredictable, and needed improvement. As summer 1909 turned to autumn farmers spoke about drainage like never before. It seemed the time was right to take action.

On a mid-November morning a group of Jasper County farmers walked into the Newton courthouse and filed a drainage petition at the Recorder's office.³⁵ The first step to straighten the Skunk was taken. At their next meeting the County Board of Supervisors appointed the county engineer, W.F. Byers, to survey the land in the proposed district.³⁶

Over the winter of 1910 Byers started and completed his survey and in early April 1910 he reviewed the results with the County Board of Supervisors. To complete the

³⁴*Newton (IA) Daily News*, "Ditching The River Bottom: Initial Movement Begun On The Maddy Farm," July 21, 1908.

³⁵"Petition for Drainage District and Drain," filed November 1909, *Drainage Records Book No. 1*, 74.

³⁶"Appointment of Engineer," filed November 1909, *Drainage Records Book No. 1*, 77.

survey Byers walked over the frozen river and made measurements “along the center thread of the channel.” The report concluded that the old riverbed, or “Classic Skunk” as it was known, measured thirty-nine miles in length through the county. Byers recommended that an eighteen mile long ditch be cut to replace it. The Supervisors, however, did not approve of Byers’ recommendation of cutting a whole new ditch. They felt it was needlessly expensive and desired to lower costs by making “short cuts [to] straighten the present stream.”³⁷ After the April meeting Byers went back out to the riverbottom with his surveying equipment and altered his original plan.

Engineer Byers had other duties to perform as well. At the same time he was tasked with the Skunk River survey he also surveyed a recently approved sewer system for the city of Newton.³⁸ He completed the second Skunk River survey by the end of July, which was approved by the County Supervisors.³⁹ The old channel meandered heavily. During the survey Byers identified 433 angles and noted that “many...amount to as much as 140 degrees” of the stream “lapping or doubling back on itself.” The new channel he proposed consisted of only five major curves and, as instructed by the Board, “follows closely the general course of the present natural channel, crossing and re-crossing it quite often.”⁴⁰

Another potential drainage problem was the existence of standing water in the old channels. The Classic Skunk was not just a single channel. Instead, the centuries of cyclical floods and intermittent water flow had carved out a complex watercourse of interconnected riverbeds. Byers noted this phenomenon, but indicated they “can be readily

³⁷*Newton (IA) Daily News*, “Supervisors Study Survey of Skunk River,” April 6, 1910.

³⁸*Newton (IA) Daily News*, “Will Resume Skunk River Survey Soon,” April 21, 1910.

³⁹“Engineer’s Report,” filed July 1911, *Drainage Records Book No. 1*, 84-93.

⁴⁰*Ibid.*

drained by lateral ditches into the main new channel.”⁴¹ Byers predicted that 1,500,000 cubic yards of dirt were “in the contract” and that a properly outfitted dredge would require approximately twenty four months to complete the work.⁴² The board was pleased with his report and ordered a public hearing on the matter be advertised in the local newspaper.

The public hearing made it clear that several landowners were not in favor of Byers’ plan. Forty-one claimants filed for property damages that required “just compensation” under the law. Some of the damages included the needless division of a contiguous piece of property, loss of watering place for livestock, loss of general water rights, or fears that “water [would] back up and flood claimant’s land.” In accordance with Iowa’s drainage laws, the Jasper Supervisors then appointed three local freeholders to assess the \$55,360.50 in damage claims.⁴³

By October of 1911 the assessors completed their work and filed a report at the courthouse. The public hearing on the matter revealed that only a small fraction of the approximately \$55,000 in damage claims made against the drainage district were considered worthy of “just compensation” under the state constitution.⁴⁴ The highest paid claimant was J.M Veach, “for having part of his land cut off,” he was awarded \$855 out of an original claim of \$2000. Others did not fare as well: Sarah Wilson, whose husband Andrew passed away the year before from cancer, claimed \$490 in damages for loss of

⁴¹Ibid.

⁴²Ibid.

⁴³“Appointment of Appraisers,” filed September 1911, *Drainage Records Book No. 1*, 107-108; Sherman, *Drainage Districts in Iowa*, 18.

⁴⁴Iowa State Constitution, Article 1, Section 18.

“water rights and existing privileges” and received no damages.⁴⁵ The total amount of money paid out for damage claims was approximately \$12,000.

Table 2: Damage Claims⁴⁶

Name (P) = Petitioner	Reason for claim	Amount requested	Amount received
Bump, George & Nellie	Prospective overflow	\$1200	0
Campbell, Willis & Colin	Divides land	\$3000	\$805
Carrier, A. & W.A. (P)	By reason of location of ditch or channel through land	\$800	\$330
Eurey, S.M.	Cuts off about ½ of land	\$500	\$105
Failor, Cora E.	Cuts off about 6 acres	\$300	\$140
Failes, J.M.	Water will back up and flood claimant's land	\$3000	0
Foster, W.O.	Divides land	\$300	\$136
Gillenwater, Joel	Cuts off land east of channel	\$300	\$80
Greenlief, L.A. (P)	Cutting off and taking some of best land	\$500	\$410
Hiller, Will R.	Cuts off 50 acres	\$2000	\$260
Holsinger, W.H.	Cuts off about 300 acres	\$5000	\$667
Ippel, Gerrit	Prospective overflow	\$5000	0
Kling, Henry	Cuts off 25 acres	\$300	\$136
Lind, S.P. (P)	Cuts off 30 acres	\$1800	\$445
Lust, Ed (P)	Objects to location	\$150	0
Moffitt, S.G.	Divides land in center	\$1000	\$215

⁴⁵“Appointment of Appraisers,” filed September 1911, *Drainage Records Book No. 1*, 107-108; “Report of Appraisers on damages and acreage in Skunk River Drainage District,” filed October 1911, *Drainage Records Book No. 1*, 109-111; “Damages Allowed,” filed October 1911, *Drainage Records Book No. 1*, 113-115; *Newton (IA) Daily News*, “Andrew Wilson Dies at Home Near Colfax,” December 15, 1910.

⁴⁶“Report of Appraisers on damages and acreage in Skunk River Drainage District,” filed October 1911, *Drainage Records Book No. 1*, 109-111; “Damages Allowed,” filed October 1911, *Drainage Records Book No. 1*, 113-115.

Table 2, Cont'd.

Newton Hunting & Fishing Club	Divides land	\$1000	\$170
Nolin, Cyrus	On account of location of ditch	\$8200	\$150
Nolin, Albert (P)	On account of location of ditch	\$2000	0
O'Roake, J.G. & B.J.	Divides land	\$1000	\$210
Ross, Charles F.	Cuts off 22 acres	\$440	\$10
Rousch, Robert	Cuts off 40 acres pasture and timber	\$1000	\$245
Scott, Eliza & R.A. (P)	Destroys watering place for stock	\$800	\$20
Tool, J.H. (P)	Destroys watering place for stock	\$300	\$225
Van Zante, Albert & Anthonie	Divides land	\$1000	\$105
Vander Ploeg, R.	Cuts off 160 to 200 acres	\$1000	\$480
Veach, J.M. (P)	Cuts off part of land	\$2000	\$855
Wilson, Sarah	Cuts off water rights and existing privileges	\$490	0
Wood, Wesley (P)	Objects to location	\$1500	0
Woody, Morgan (P)	Cuts off land from residence	\$1600	\$155

An analysis of damage claims indicates what sorts of inconveniences the County Board of Supervisors deemed worthy of compensation. Although nobody got the full amount they requested, some money was paid out. Landowners who claimed the ditch divided a contiguous piece of property were compensated the most. The ditch affected fifteen acres owned by the Campbell brothers, Willis & Colin, and they received \$805 out of an original claim of \$3000. Physical location of the ditch on one's property also received a payout. L.A. Greenlief claimed ten acres of his best land were being taken and received \$410 out of a \$500 claim. The Board sympathized over the loss of water access

for livestock as well, granting J.H. Tool \$255 out of a \$300 claim on seven acres of land. Claims affecting the agricultural viability of the land were prioritized over all others.

Claims not considered worthy of compensation focused on flooding. George & Nellie Bump (\$1200), J.M. Failes (\$3000), and Gerrit Ippel (\$5000) filed expensive claims for that reason, but the Board of Supervisors awarded none of them compensation. Ditch promoters believed that drainage enhanced flood control, and the fact none of the flood claims received payment indicates it was not a valid concern. Only the physical alteration of one's land held any water during the damage claim process.

Much like the lack of worry over flooding, claims associated with non-agricultural use of the bottomlands also received no consideration. The Skunk River had long been known as a place where one could enjoy the outdoors. Sunday school groups often held picnics in the groves near its riverbanks. One of the most popular gathering places, Moffitt's Grove, hosted many a family reunion, church revivals, or simple "jolly outings." Much more sophisticated than a simple camping trip, the gatherings sometimes involved several hundred people, boating, music, and even fireworks on the Fourth of July.⁴⁷ Not surprisingly, some farmers who owned land along the riverbottom used their holdings for recreational purposes.

Much like farmers in the country, many townspeople also enjoyed recreation on the river. Many local businessmen, either individually or in groups, owned fully furnished "club houses" along the banks of the river and used them often during the warmer months.

⁴⁷*Newton (IA) Daily News*, "Young Folks Picnic at Moffitt's Grove," July 11, 1906; *Newton (IA) Daily News*, "Picnic at Moffitt's Grove," June 27, 1906; *Newton (IA) Daily News*, "Century Club Picnic at Moffitt's Grove," August 17, 1906.

In 1907 the *Newton Daily News* reported there were nine separate club houses operating along the river.⁴⁸ One clubhouse was described as “screened throughout” and “as modern it can be.”⁴⁹ Parties as large as fourteen would spend a night or stay as long as two weeks.⁵⁰

Enjoyment of a river clubhouse, however, was not enough grounds for compensation from the Board of Supervisors. The Newton Hunting and Fishing Club, a local organization of sportsman, adamantly opposed the channelization of the river. The club owned a small clubhouse along the river and had plans to build a bigger one. Their concern was not the destruction of their hunting and fishing grounds, but rather that the ditch route “threw [*sic*] their present club house on the far side of the river.”⁵¹ Club officials met with the Board of Supervisors to plead their case but in the end it was to no avail. About one month after the dredge boat fired up its boilers the forty-six acre tract owned by the club was sold for \$2500, or fifty-four dollars per acre.⁵² The river’s recreational value was an ancillary concern when compared to the productive potential of the bottomlands.

Residents of Jasper County and the surrounding area enjoyed the Skunk River for its value as a beautiful place to relax and enjoy outdoor activities, but maybe not so surprising for that time, no voices materialized that opposed the ditching project on the grounds of recreational use. The organization in the best position to dissent, the Newton Hunting and Fishing Club, failed in their attempts. Instead they opposed the project

⁴⁸*Newton (IA) Daily News*, “Club House Broken Into,” May 29, 1907.

⁴⁹*Newton (IA) Journal*, “Camping Party Home From River,” August 16, 1913.

⁵⁰*Newton (IA) Daily News*, “Merry Mad Caps to the River,” June 14, 1913.

⁵¹*Newton (IA) Daily News*, “New Skunk River Causes Club Much Grief,” February 14, 1911.

⁵²*Newton (IA) Daily News*, “Buys Land From Newton Hunting and Fishing Club,” October 4, 1912.

because it re-routed the watercourse around their clubhouse, and then promptly sold their property when the Board of Supervisors refused to change the route of the new channel or compensate them for their claims.

The only dissent to straightening on grounds of aesthetics came from outside the county. A few weeks after word of the project circulated around the state, the *Burlington Hawkeye*, a newspaper from a town on the banks of the Mississippi River printed the following article:

The Classic Skunk In Jasper County

The Skunk river in Jasper county is a marvelous crooked stream. It's course in that county measures some sixty miles, whereas if it were straightened out, twenty miles would suffice. Now, there is much valuable land to be gained by the straightening of this erratic old Skunk and the board of supervisors has a petition asking that the improvement be ordered. If the natural drainage is properly taken care of, that drainage plan ought to prove a very profitable undertaking. When the matter is viewed from another point, of course, different conclusions may be arrived at. The meandering Skunk is one of the most beautiful of the smaller streams of the West, and the lover of scenic beauty will mourn the day that sixty miles of wooded banks and rippling stream are changed into a canal twenty miles long and about as interesting and beautiful as a railroad fill.⁵³

In the mind of a ditch promoter a crooked stream running through fertile bottomlands was a waste of natural resources. The land needed to be used properly, and the only way to do that was by making it more suitable for crop production. There was no profit in a fishing trip or a clubhouse stay, only frivolity. The plea for preservation of the Skunk's beauty was not mentioned again, and the days of enjoying the crooked, Classic Skunk were numbered.

⁵³Newton (IA) Daily News, "The Classic Skunk In Jasper County," from *The Burlington Hawkeye*, December 24, 1909.

Compared to commonly held twenty-first century values, perceptions of how to interact with the environment were drastically different in 1910. Pioneering forester Gifford Pinchot, who during the Teddy Roosevelt administration (1901-1908) established millions of acres of federal forest reserves, referred to resource conservation as “wise use.”⁵⁴ His words reflected the general attitude of consumption that early twentieth century Americans expressed toward the environment. Timber, water, coal, or any other natural resource existed for the use and benefit of humans, and the application of the latest scientific and technological advancements to consume them more efficiently was viewed as wise.

In his book *Breaking New Ground*, Pinchot described resource conservation as a moral crusade:

Trees may be grown as a crop just as corn may be grown as a crop. The farmer gets crop after crop of corn, oats, wheat, cotton, tobacco, and hay from his farm.

A well-handled farm gets more productive as the years pass. So does a well-handled forest. On a badly handled farm, contrariwise, production decreases, the soil washes or blows away, floods are encouraged, and not only the farmer but also the public interest, suffers loss.⁵⁵

Sentiment over environmental preservation was still a generation away. In fact, Pinchot considered the idea an “actual and reprehensible waste.”⁵⁶ The conscious act of leaving nature alone then stood in opposition to one’s moral responsibility. With that distinction in mind it becomes easier to understand why the preservation-oriented aesthetic argument came only from a newspaper far removed from Jasper County. People believed the bottom

⁵⁴Gifford Pinchot, *Breaking New Ground* (New York: Harcourt, Brace, and Company, 1947), 31-32.

⁵⁵*Ibid.*

⁵⁶*Ibid.*, 183.

land was capable of growing large amounts of grain, and the morally correct course of action was wise management of those resources.

A river's potential for "use" shaped how humans sought to improve it. Early nineteenth-century canals in the eastern United States foreshadowed later improvements further west.⁵⁷ By the turn of the century, river usage in the Midwest focused on commercial shipping and hydroelectric energy. A 1906 "Deep Water Convention" in St. Louis sought federal dollars to link Lake Michigan with the Gulf of Mexico through the construction of a canal.⁵⁸ The following year Congress appropriated a record-breaking sum of eighty-three million dollars to "embark upon a liberal policy for the development of [America's] internal waterways."⁵⁹ In 1913 a major hydroelectric dam was completed across the Mississippi River at Keokuk, Iowa that electrified homes in a three-state area.⁶⁰ Although it never came to fruition, even the rocky Des Moines River was once considered worthy of improvement for inland navigation.⁶¹ Be it commercial shipping or hydroelectricity, the "wise use" of large rivers focused on the value of flowing water.

The Classic Skunk was not naturally useful enough for navigability or hydroelectric improvements. Considered more of a stream than a river, the main channel was far too shallow for commercial boat traffic and its volume of water flow was too intermittent for hydroelectricity. Still, the river was not without possibilities. Covered in rich, silt-laden

⁵⁷The Erie Canal is a noteworthy American water management project. For more information readers should consult Carol Sheriff, *The Artificial River: The Erie Canal and the Paradox of Progress, 1817-1862* (New York: Hill and Wang, 1996).

⁵⁸*Newton (IA) Daily News*, "Deep Water Convention," November 17, 1906.

⁵⁹*Newton (IA) Daily News*, "\$83,000,000 For Rivers," January 24, 1907.

⁶⁰*Newton (IA) Journal*, "The Big Keokuk Dam Was To Be Opened Today," August 26, 1913; *Newton (IA) Daily News*, "Harnessing the Mississippi River," August 13, 1913.

⁶¹*Newton (IA) Daily News*, "River Plan Is Good," February 18, 1910; *Newton (IA) Daily News*, "Navigating the Des Moines," February 12, 1908.

soil, the Classic Skunk's greatest asset was the wide, flat bottomland. Because the water was not useful as a commodity, improvement efforts directed capital at bottomland within the Skunk's riparian environment.

With townspeople content to alter patterns of recreation and farmers financially compensated for property damages, plans for the ditch moved steadily forward. The County Supervisors advertised the project in publications across the state and in a short time several companies submitted bids. In the tradition of minimizing the burden of cost, it was reported that the County Board of Supervisors set the high bid mark at six cents per cubic yard.⁶² With a bid set at five and one half cents per cubic yard, the Lana Construction Company of Harlan, Iowa landed the lucrative \$125,000 contract over eighteen other bidders.⁶³

The contract with the Lana Construction Company stipulated that the ditch was to be thirty feet wide at the bottom, forty feet wide at the top, and between eleven and sixteen feet deep. Final approval of the work rested with the Board of Supervisors, but they deferred the bulk of the authority to county engineer W.F. Byers. The power relationship was defined as follows:

The...Board of Supervisors...have general supervision of the work, but the detailed supervision of the entire work of construction will be in charge of W.F. Byers, of Newton, Iowa, as construction Engineer, duly appointed by said Board, and to whom all questions and matters relating to plans of construction, or carrying on the work, or construing the intent or meaning of these specification shall be referred and in such matters his decision shall be final and binding upon both said parties.⁶⁴

⁶²*Newton (IA) Daily News*, "Bids for Drainage Ditch Contract Opened Today," December 20, 1911.

⁶³*Newton (IA) Journal*, "Skunk River Big Ditch Contract Let," December 27, 1911.

⁶⁴"Specifications," filed November 1911, *Drainage Records Book No. 1*, 129-132.

The wording implies a great deal of authority deferred to Engineer Byers by the Board of Supervisors, but almost paradoxically, any decision that Byers made was under direct scrutiny of the Board. If they were dissatisfied with his recommendations then Byers was obligated to bend to the will of the Board and alter plans accordingly.

For example, as mentioned earlier, the Board of Supervisors disagreed with Byers over the course and location of the New Skunk channel. When Byers made the original survey of the bottomlands he recommended a whole new ditch be dug right beside the intertwined channels of the Classic Skunk. He reasoned that using too much of the old riverbed could result in an unstable ditch that would require increased maintenance and upkeep. So to “avoid the possibility of having to do the work over again,” he recommended a completely new channel be dug.⁶⁵ Citing increased costs, the Board disagreed with Byers and overruled his authority. In the minds of board members, their role in the ditch project was to execute the plan as cheaply as possible, even if that meant disregarding the technical expertise of their engineer.

Engineer Byers’ role in the straightening of the Skunk River is best described by what environmental historian Donald Worster referred to as “instrumental reason.” In the 1985 publication *Rivers of Empire: Water, Aridity, and the Growth of the American West*, Worster defined instrumental reason as “thinking carefully and systematically about the means while ignoring the problem of ends.”⁶⁶ The instruments of science and technology are reasoned to promote the public welfare, while at the same time are used by agenda-driven individuals with specific designs on the outcome of their investments.

⁶⁵ *Newton (IA) Daily News*, “Supervisors Study Survey of Skunk River,” April 6, 1910.

⁶⁶ Worster, *Rivers of Empire*, 27.

The recommendations made by W.F. Byers in his official report were a product of his professional training as an engineer, but were guided by the wishes of those who petitioned for the creation of the drainage district. For petitioners, the “public health, benefit utility, convenience, and welfare” was associated with the generation of wealth for themselves.⁶⁷ Evidenced by the alterations made to his survey, and strengthened by public opinion published in the *Newton Journal*, engineer Byers was an effective instrument.⁶⁸

The County Supervisors had final authority on all decisions regarding the drainage ditch, but even they were influenced by those who elected them to office and funded the project. Whether they petitioned for the ditch or not, landowners in the proposed district financed the entire project. The decisions made by the Board of Supervisors then represented popular consent among petitioners who lobbied the hardest and had the most to gain from the work. Even though many of the petitioners had no legal authority or professional training to plan the Skunk’s new route, their demands were heard because they were paying for it and would vote in local elections.

For some of the farmers, Byers’ plan to dig a whole new ditch was too expensive. The Board echoed that sentiment and advised Byers to find a way “to make short cuts and straighten the present stream without the necessity of cutting an entirely new channel.”⁶⁹ In late April 1910, Byers redoubled his efforts, went back out to Skunk with “a force of men,” and altered the survey accordingly. Completed in three months, on July 27 Byers filed a

⁶⁷“Petition for Drainage District and Drain,” filed November 1909, *Drainage Records Book No. 1*, 74.

⁶⁸*Newton (IA) Daily News*, “Will Resume Skunk River Survey Soon,” April 21, 1910.

⁶⁹*Newton (IA) Daily News*, “Supervisors Study Survey of Skunk River,” April 6, 1910.

revised Engineer's Report at the courthouse. His second report became the official plan for the ditch.⁷⁰

A few weeks after Byers' original plan was overruled, and three months before he filed the official report at the courthouse, the *Newton Journal* predicted that "on account of the heavy expense to tax payers it is not likely that the plan to dig a complete ditch apart from the present river bed will ever grow in favor."⁷¹ Surveying the river was a time-consuming, laborious process that required a crew of several people. A large entourage of men meandering through the riverbottom with bulky surveying equipment would have been quite a spectacle. Interested farmers, always knowledgeable of the happenings on their property, were most likely aware of the progress of the surveying party and may have gone down to observe the work and even offer an opinion or two on the matter. After learning of the initial plan to dig a whole new ditch they most likely dissented amongst themselves, then contacted the Supervisors to ask that changes be made. Conforming to the notion of instrumental reason, Byers prioritized the "bottom-line" demanded by petitioners.

Channelizing the Skunk River was an expensive project, and jobs of that size typically needed sources of private funding. Indeed, shortly after contracting a ditching company the Board of Supervisors advertised the auctioning off of drainage bonds to fund the project. The opportunity attracted the attention of investment firms from Chicago, St. Louis, Davenport, Toledo, and Des Moines. Backing \$110,000 worth of drainage bonds at an interest premium of 5.5 percent, the Chicago-based H.G. Spear and Sons Company won

⁷⁰"Engineer's Report," filed July 1911, *Drainage Records Book No. 1*, 84-93.

⁷¹*Newton (IA) Daily News*, "Will Resume Skunk River Survey Soon," April 21, 1910.

the right to finance the operation. With financing secured, in January 1912 the project was only months away from starting.⁷²

Financial backers like the H.G. Spear and Sons Company found the Skunk River Ditch an attractive investment opportunity because land in Jasper County was in high demand and had steadily increased in value for several years. Originally sold by the Federal Land Office for \$1.25 per acre, ground that sold for \$40 per acre in 1891 sold for \$164 in 1911.⁷³ In 1915 a tract of unimproved farmland in the eastern part of the county sold for the astronomical price of \$317 per acre.⁷⁴ Perpetually in high demand, wet prairie farmland was considered a very safe investment because it had a history of increasing in value.

With financial backing in place and a signed contract from a dredge company, the next move was the fair distribution of cost. The burden of cost fell not just to petitioners, but anyone owning land in the district that stood to gain from the improvement. Of course not all land benefitted equally, and farmers owning the lowest lands paid the highest price. To ensure proper distribution of the cost, the County Supervisors appointed a group of appraisers, or "Classification Commission," who quantified how much each tract of land benefitted from the work.⁷⁵

⁷²*Newton (IA) Journal*, "Ditch Bonds Were Sold At Auction," January 27, 1912; "Contract For Sale of Drainage Bonds," filed January 1912, *Drainage Records Book No. 1*, 150-151.

⁷³*Newton (IA) Daily News*, "Jasper County Land Sells at a High Figure," December 6, 1911.

⁷⁴*Newton (IA) Daily News*, "\$30,000 Was Paid For 95 Acres Of Farmland," April 28, 1915.

⁷⁵"Report of Classification Commission and Appraisers," filed April 1912, *Drainage Records Book No. 1*, 156-175.

Table 3: Private Land Assessed by the Classification Commission⁷⁶

Assessment Rate	% of Total Acres	% of Total Value
100	6.6	11.3
90-99	12.7	19.1
80-89	18.9	25.7
70-79	13.9	16.9
60-69	8.1	8.4
50-59	7.6	6.6
40-49	5.7	3.9
30-39	5.4	2.9
20-29	8.1	3.0
10-19	9.6	1.9
0-9	3.4	.03

Assessments were made on all private land, railroad right-of-ways, and public roads, then taxed based on a “just proportion of the estimated cost of improvement.”⁷⁷ As indicated by Table 3, most of the land was assessed between seven and nine dollars per acre. Classifying perceived benefits was complicated, time-consuming, and depended greatly on the discretion of the assessor. State officials recognized that inconsistent assessments invited litigation, and to fix that problem established a set of guidelines. In early 1911 the *Report of the Iowa State Drainage, Waterways and Conservation*

⁷⁶Ibid.

⁷⁷Ibid.

Commission for the Biennial Period Ending January 1911 provided local officials with a procedure for measuring benefits.⁷⁸

All land was divided into forty acre tracts and classified on a scale of one to one hundred (see Image 9). Higher numbers indicated a high benefit and low numbers a low benefit. The Supervisors in Jasper County classified land in increments of tens and fives. For example, if a tract was classified at fifty percent then the tax rate on that land was five dollars per acre, and a sixty percent classification meant six dollars per acre was taxed (see image 10). Criteria also included elevation of land and distance to the ditch outlet. The system ensured that wet lowlands closest to the river were taxed high, and drier uplands farther away from the bottoms were taxed low.⁷⁹

Classification	Tax Rate
1%	0.10
2%	0.20
3%	0.30
4%	0.40
5%	0.50
6%	0.60
7%	0.70
8%	0.80
9%	0.90
10%	1.00
11%	1.10
12%	1.20
13%	1.30
14%	1.40
15%	1.50
16%	1.60
17%	1.70
18%	1.80
19%	1.90
20%	2.00
21%	2.10
22%	2.20
23%	2.30
24%	2.40
25%	2.50
26%	2.60
27%	2.70
28%	2.80
29%	2.90
30%	3.00
31%	3.10
32%	3.20
33%	3.30
34%	3.40
35%	3.50
36%	3.60
37%	3.70
38%	3.80
39%	3.90
40%	4.00
41%	4.10
42%	4.20
43%	4.30
44%	4.40
45%	4.50
46%	4.60
47%	4.70
48%	4.80
49%	4.90
50%	5.00
51%	5.10
52%	5.20
53%	5.30
54%	5.40
55%	5.50
56%	5.60
57%	5.70
58%	5.80
59%	5.90
60%	6.00
61%	6.10
62%	6.20
63%	6.30
64%	6.40
65%	6.50
66%	6.60
67%	6.70
68%	6.80
69%	6.90
70%	7.00
71%	7.10
72%	7.20
73%	7.30
74%	7.40
75%	7.50
76%	7.60
77%	7.70
78%	7.80
79%	7.90
80%	8.00
81%	8.10
82%	8.20
83%	8.30
84%	8.40
85%	8.50
86%	8.60
87%	8.70
88%	8.80
89%	8.90
90%	9.00
91%	9.10
92%	9.20
93%	9.30
94%	9.40
95%	9.50
96%	9.60
97%	9.70
98%	9.80
99%	9.90
100%	10.00

Image 9: "Tax assessment template used by the Classification Commission." The Classification Commission for the Skunk River Ditch used increments of ten and five for determining tax rates.

Drainage Records Book No. 1. 158.

⁷⁸*Report of the Iowa State Drainage, Waterways and Conservation Commission for the Biennial Period Ending January 1911* (Cedar Rapids: The Torch Press, 1910), 48.

⁷⁹*Ibid.*, 50; "Report of Classification Commission and Appraisers," filed April 1912, *Drainage Records Book No. 1*, 156-175.

<u>No.</u> <u>acres</u> <u>board</u>	<u>Class</u> <u>in</u> <u>feet</u>	<u>Rate</u> <u>per</u> <u>acre.</u>	<u>Total</u> <u>Tax</u>
40	55	8.50	340.
39	70	7.	273.
35.25	90	9.	317.25
34.20	85	8.50	290.70
40.	50	5.	200.
40.	60	6.	240.

Image 10: "Excerpt from Classification Commission report, 1912." Right of ways for county roads, rail lines, or the ditch itself were subtracted from the total tract, leaving some sections with odd measurements.

Drainage Records Book No. 1, 168.

The assessments were completed in April 1912. All told the Commissioners assessed nearly 21,000 acres of private property at a value of approximately \$112,500. The right-of-ways of four railroad lines totaled \$5,730, and the benefit to thirty-two acres of county roads totaled approximately \$3,000. Similar to the procedure for handling damage claims, each landowner was given notification of the assessment and the option to appear at a public hearing either to start repayment or to protest the Commission's conclusions.⁸⁰

The public hearing was held the following month and several objections were filed. The most common dispute was the perceived level of benefit the ditch had on pieces of property. Several people felt their land was taxed too high and the benefit to it too low. Others went as far as to claim the procedure itself was unconstitutional and violated their right to be justly compensated for the taking of private property. The thirteenth amendment to the state constitution assured the Commissioners and the County Supervisors that their actions were legal. Still, others invoked rhetoric used in the previous year's damage claims and argued that the ditch made farming the land impracticable.⁸¹ A few protests resulted in slightly reduced assessments, but by-and-large the rates were not adjusted or questioned.

⁸⁰"Report of Classification Commission and Appraisers," filed April 1912, *Drainage Records Book No. 1*, 156-175.

⁸¹"Objectors and Objections to Classification & Assessment," filed May 1912, *Drainage Records Book No. 1*, 183-185.

Table 4: Top 10 Landowners, Highest Total Tax Assessments⁸²

Rank	Name (P) = Petitioner	Total Tax Assessments	Acres Taxed	Avg. Tax Per Acre
1	W. H. Holsinger ⁸³	\$5,605	734	\$7.64
2	Fannie & Arthur Lufkin	\$5,090	758	\$6.71
3	R. Vander Ploeg	\$4,785	769	\$6.22
4	Leonard Greenlief (P)	\$3,799	651	\$5.84
5	Patrick Healy ⁸⁴ (P)	\$4,186	540	\$7.76
6	Mortimer Wheelock	\$3,510	398	\$8.82
7	John H. Tool (P)	\$3,420	515	\$6.64
8	J.W. Veach (P)	\$3,115	386	\$8.08
9	George Miller	\$3,054	548	\$5.58
10	Riley Lust (P)	\$2,963	416	\$7.13
	Total, Top 10 landowners	\$39,527	5,715	NA
	Avg., Top 10 landowners	\$3,953	572	\$7.04
	Totals for all 172 landowners in the drainage district	\$112,389	20,903	\$5.99

The ten landowners assessed the highest owned an average of 572 acres and paid an average of \$3,953 in tax assessments. 35 percent of the total tax assessment on privately held land came from these ten people, who owned 27 percent of the land in the district.

⁸²The numbers are based on all privately owned land in the drainage district. Railroads and publicly owned land were not included in the computations. "Report of Classification Commission and Appraisers," filed April 1912, *Drainage Records Book No. 1*, 156-175.

⁸³W.H. Holsinger contracted approximately 730 acres of drainage district land from Fannie and Arthur Lufkin, giving him a substantially larger total than any other landowner.

⁸⁴The totals for Patrick Healy represent the combined holdings of him and his father, Thomas, who passed away shortly after the petition was filed. Both men were petitioners and Patrick inherited the holdings of his father.

Table 5: Top 10 Landowners, Highest Tax Rates Per Acre⁸⁵

Rank	Name (P) = Petitioner	Total Tax Assessments	Acres Taxed	Avg. Tax Per Acre
1	S. G. Moffitt	\$580	58	\$10.00
2	J.A. Fitzpatrick	\$348	35	\$10.00
3	James Campbell (P)	\$760	80	\$9.50
4	S.P. Lind	\$661	70	\$9.39
5	James Good	\$653	70	\$9.32
6	O.J. Turner	\$1,418	155	\$9.13
7	Newton Hunting & Fishing	\$378	42	\$9.10
8	A.H. Hixson (P)	\$693	77	\$9.00
9	J.T. Hamilton	\$674	75	\$9.00
10	Mortimer Wheelock	\$3,510	398	\$8.82
	Total, Top 10 landowners	\$9,675	1,060	NA
	Avg., Top 10 landowners	\$967	106	\$9.33
	All 172 landowners in the drainage district	\$112,389	20,903	\$5.99

The ten landowners assessed the highest tax rates owned an average of 106 acres and paid \$967 in tax assessments. 8 percent of the total tax assessment on privately held land came from these ten people, who owned 5 percent of land in the district.

⁸⁵“Report of Classification Commission and Appraisers,” filed April 1912, *Drainage Records Book No. 1*, 156-175.

Table 6: Top 10 Landowners, Most Land Owned⁸⁶

Rank	Name (P) = Petitioner	Total Tax Assessments	Acres Taxed	Avg. Tax Per Acre
1	R. Vander Ploeg	\$4,785	769	\$6.22
2	Fannie & Arthur Lufkin	\$5,090	758	\$6.71
3	W. H. Holsinger	\$5,605	734	\$7.64
4	Leonard Greenlief (P)	\$3,799	651	\$5.84
5	George W Miller	\$3,054	548	\$5.58
6	Patrick Healy (P)	\$4,186	540	\$7.76
7	Harry B. Allfree (P)	\$1,952	529	\$3.69
8	J.H. Tool (P)	\$3,420	515	\$6.64
9	Riley Lust (P)	\$2,963	416	\$7.13
10	Mortimer Wheelock	\$3,510	398	\$8.82
	Total, Top 10 Landowners	\$38,364	5,858	NA
	Avg., Top 10 Landowners	\$3,836	586	\$6.60
	All 172 landowners in the drainage district	\$112,389	20,903	\$5.99

The ten people owning the most land in the district held an average of 586 acres and paid \$3,386 in tax assessments. 28 percent of all privately held land was owned by these ten people, who paid 34 percent of the total tax assessment.

⁸⁶Ibid.

The assessment statistics reveal an important point. The project was funded largely by a very small percentage of the district's 172 landowners, and that the highest tax assessments were paid by those who owned very small amounts of land. The average assessment of the top ten landowners most likely to benefit from the improvement was \$9.33 per acre (see Table 5), while those who paid the highest assessment totals (see Table 4) were rated an average of \$7.04, or a difference of \$2.29 per acre. Those who owned the most land (see Table 6) paid an average rate of \$6.60 per acre, or \$2.73 less than the people assessed the highest.

The purpose of the drainage district was to encourage cooperation among many landowners who desired improved drainage on their land, and in that regard the drainage district movement was hugely successful. By 1920 over five million acres of land, nearly fifteen percent of the state's total land area, was organized within a drainage enterprise, and the amount of capital invested in those projects totaled over fifty million dollars.⁸⁷ At the 1908 State Drainage Convention drainage booster A.J. Lilly properly recognized that the advancement of drainage interests in Iowa required the triumph of the "will of the majority of the landowners interested."⁸⁸ His words foreshadowed changes made to the state's constitution later that year, and adequately explain what happened in the bottoms of Jasper County's South Skunk River.

In July 1912 the procedural side of the Skunk River Ditch was near completion. The tax assessment protests were resolved in late May and the County Supervisors enjoyed a relatively quiet month of June. Indicative of the county's wealth, many farmers quickly

⁸⁷Sherman, *Drainage Districts in Iowa*, 8.

⁸⁸Lilly, "Dredge Ditches," 9.

settled a portion of their drainage bills with the Treasurer. By mid-July only \$47,400 of the original \$121,000 assessment remained, and that balance was scheduled into seven year repayment plans.⁸⁹ With all their ducks in a row, the County Supervisors even found time to travel to Chicago and purchase a cement mixer to help make the county roads more traversable for the many automobiles that now used them.⁹⁰ And perhaps a more distinct harbinger of the encroaching modern age, Newton's first-ever speeding ticket was also issued that summer.⁹¹

Everywhere people improved the speed and efficiency of the world around them, and Jasper County was no exception. Automobiles, telephones, electric lights, indoor plumbing, and paved streets replaced the isolated pioneer settlements of the last century. The swampy bottom land of the Classic Skunk had endured in its natural state far longer than the upland grass prairies that were "busted" many years before, but that human desire to improve upon nature eventually seeped its way into the bottoms. In August 1912, as teamsters from the Lana Construction Company assembled their dredge boat on the river's bank near Colfax, old images of that "marvelous crooked stream" were replaced by new and improved visions of more money and less flooding.

⁸⁹ "Resolution," filed May 1912, *Drainage Records Book No. 1*, 190-193.

⁹⁰ *Newton (IA) Daily News*, "Board Returns From Chicago Bought A Mixer," May 4, 1912.

⁹¹ *Newton (IA) Daily News*, "Violator of Speed Ordinance is Fined \$4.85," July 17, 1912.

CHAPTER 3: ODE TO THE DREDGE BOAT

Ode to the Steam Shovel, 1922

Ho! I am a monster of power and speed,
My jaws are endowed with an endless greed.
And where my master is skilled and kind
I leave a path of joy behind.

I dig your basement and build your street,
I dig canals till the oceans meet.
No job too big and none too small,
My kind are designed to meet them all.

I bridge the chasm, the desert span.
Reclaim the wilderness for every man.
I gladness bring a message of cheer
To the lonely settler and pioneer.

For progress follows where I pass by,
And comfort and wealth made to multiply;
I make of the desert a garden spot,
Of Everglades an orchard plot;

Brighter grow and increase my worth,
For I am the power that conquers the Earth.¹

There is no question that wet prairies were altered so people could grow large amounts of crops, but accepting that reality at face value is to focus on the ends of drainage and wholly neglect the means. Draining wetlands and straightening rivers was capital intensive, and required complex technology and the contributions of many people. Using the straightening of the Skunk River as the subject, this chapter gives an overview of dredging technology and then provides a narrative of the actual straightening of the Skunk River by the Lana Construction Company's dredge boat.

¹"Ode to the Steam Shovel," *Steam Shovel And Dredge* (July 1922): 14.

Much more difficult to put under cultivation than the upland prairies, altering the lowlands required specific technology adapted for use in swampy environment. In 1909 the steam-shovel was a contractor's weapon of choice for moving large amounts of earth, but could only function on dry land. Operating on a river required a boat, and shallow streams like the Skunk could only support flat-bottomed barges that displaced very little water. A machine capable of excavating earth in a riparian environment was then a marriage of steam-shovel and barge technology. Essentially just a steam shovel built on top of a barge, the machine that straightened the Skunk, and many other wet-prairie rivers, was called a dredge boat.

Overview of Dredge Technology

Local industrialist George Parsons and his new ditching machines proved that major drainage work in the bottoms was possible, but even his homegrown technology was not up to the task of digging a trench thirty feet wide at the bottom, forty feet wide at the top, and between eleven and sixteen feet deep. A project of that size required the massive earth-moving capabilities of a steam-powered dredge boat. While no documentation has been found to identify the exact dredge boat used by the Lana Construction Company to straighten the Skunk River, observations printed in the local newspapers allow for an accurate description of the machine.²

²The actual dredge used by the Lana Construction Company to straighten the Skunk River is lost to history, but many conclusions can be drawn by examining supporting evidence. Newspaper accounts give firsthand accounts of the crew compliment and make reference to several parts of the vessel. The Engineer's Report filed by W.F. Byers gives specific information about the size of dredge needed to complete the job.

The vessel used on the Skunk River was a single-bucket intermittent, or “dipper” dredge, named for the excavation bucket located on the machine’s bow.³ The intermittent up-and-down movement of the dipper differed from the chainsaw-like “continuous dredges,” like the Parsons model that excavated by a series of small buckets that ran on a circular chain. Although capable of digging drainage ditches, Parsons’ machine was not adapted for use on a river. Ditchers like the ones produced by Parsons supported the work of dipper dredges by digging lateral ditches that connected undrained lands with water outlets and for laying ceramic tile underneath fields.

In the early 1900s dipper dredges were widely accepted as the proper machine for straightening small rivers.⁴ According to Charles Prelini, author of an early book on dredges:

The dipper dredge is the typical American dredge, and has rendered magnificent services on the Great Lakes. But even to-day, notwithstanding there are so many powerful dredges at our disposal, the old-time dipper dredge of small capacity can still be considered without a rival on small contracts for the improvement of narrow rivers and in digging canals for draining purposes when the debris is deposited on both sides to form a levee. The dipper dredges of small capacity are handled by a few men, are not easily broken, and the repairs are almost insignificant.⁵

The dipper dredge represents the technological means for completing similar drainage projects across the wet prairies, and the complexity of their design helps gain an understanding of how people and machines actually did the work of straightening rivers for the purpose of drainage.

³Charles Prelini, *Dredges and Dredging*, 2nd edition (New York: D. Van Norstrand Company, 1912), 4.

⁴For more information about many different types of steam powered dredges used in the early 1900s readers should consult Charles Prelini, *Dredges and Dredging*.

⁵Prelini, *Dredges and Dredging*, 159.

The eight essential parts of a dipper dredge were the hull, spuds, boom, turntable, engine, A-frame, boiler, and dipper.⁶ Image 11 shows a period dipper dredge used to straighten the Patoka River near Winslow, Indiana. In that image the “business” end of the dredge (boom and dipper) is clearly visible. The dredge used to straighten the Skunk was very similar to the dredge in the picture.

The hull was made of wood and to meet the specific size requirements of a job was assembled on site. For each job a completely new hull was constructed, as ditch sizes varied and the operating stress rendered it unusable after one job. The Skunk River ditch’s bottom width was thirty feet, and that size required a hull approximately twenty six feet wide, sixty-five feet long, and a draft of two or three feet.⁷ Properly measured hull dimensions ensured the right balance ratio and reduced the risk of the boat breaking apart under stress, tipping over, or catching on a snag and sinking.

⁶J.O. Wright, *Excavating Machinery Used For Digging Ditches And Building Levees*, Washington D.C.: United States Department of Agriculture, from *Circular 74*, (Washington D.C.: Office of Experiment Stations, United States Department of Agriculture, 1907), 7.

⁷The length of a hull was two and one half times its width. Wright, *Excavating Machinery Used For Digging Ditches And Building Levees*, 8.

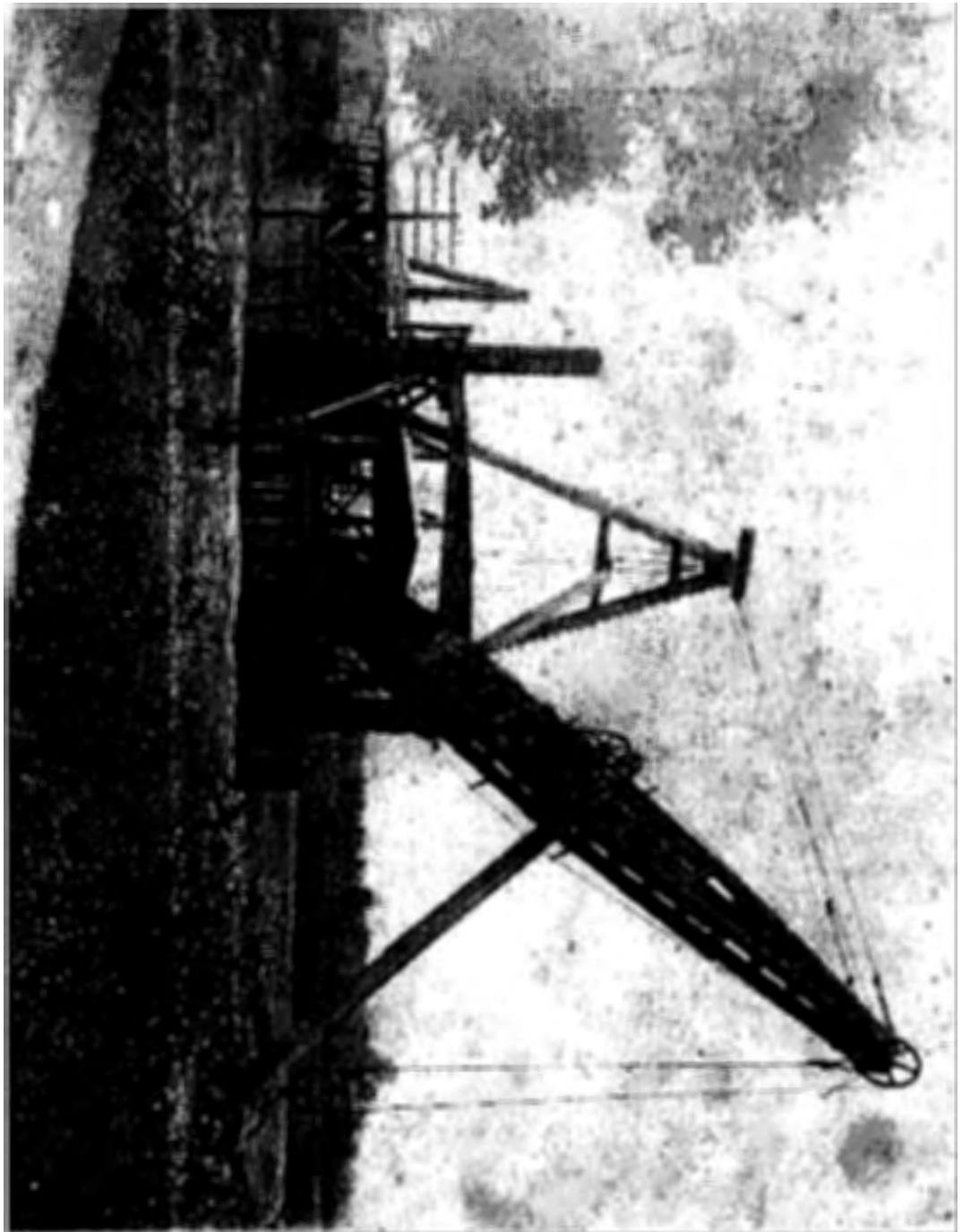


Image 11: *Dredge Boat Cleaning Patoka River at Winslow, Indiana, circa 1920.* The dipper dredge in the picture was similar to the one used to straighten the Skunk River. Image from personal collection of John Dedman of Winslow, Indiana. Used with permission.

Total stability ensured the dredge's dipper worked properly. The entire Lana outfit weighed approximately seventy tons, with a disproportionate amount of that weight mounted on the vessel's bow.⁸ The bow housed the dipper and boom arm, which were both made of iron and caused the front end of the boat to be much heavier than the rear. Additionally, in order to drop excavated material on the riverbank to form a levee, the boom moved on a turntable that swung out ninety degrees from the center position. Imbalance was inherent in the normal operation of the dipper and boom.

The dredge's three spuds created the stability necessary to safely run the dipper. Spuds were large wooden beams attached to the hull that came into contact with the ground. One spud on either side of the dipper extended out from the bow and dug into the riverbank. Attached to the center of the stern, the third spud was sunk vertically into the riverbed. Three properly installed spuds supported the long, flat hull like "the legs of a table," and safely balanced the machine.⁹

⁸*Newton (IA) Daily News*, "Big Dredge Near Colfax Encounters Snag And Sinks In River," December 9, 1912.

⁹Charles Prelini, *Dredges and Dredging*, 152.

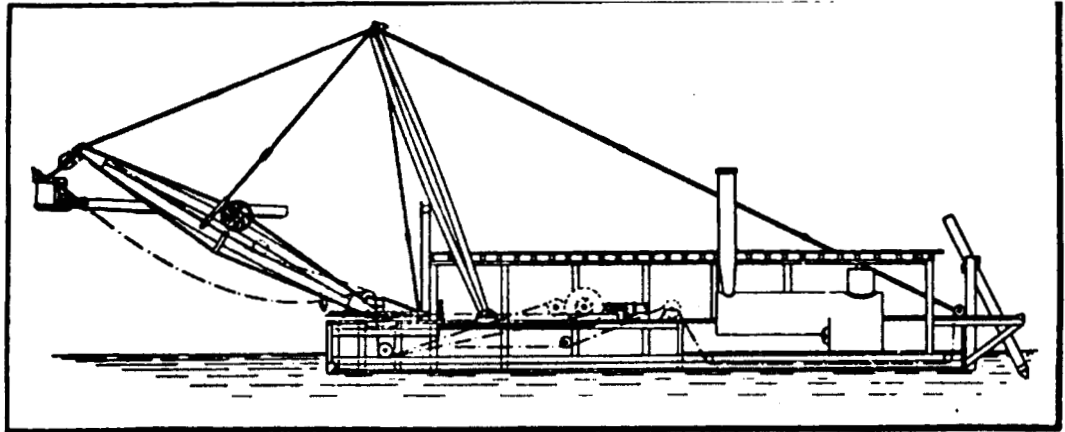


FIG. 1.—Dipper dredge, side view, showing arrangement of machinery.

Image 12 (top): “Fig 1.-Dipper dredge, side view, showing arrangement of machinery,” from Wright, *Excavating Machinery Used For Digging Ditches And Building Levees*, 7.

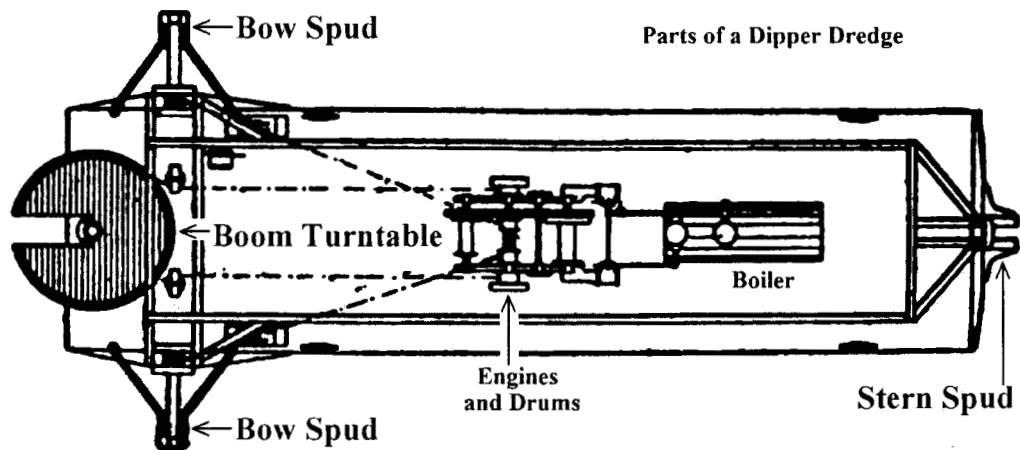


Image 13 (middle): “Side and End Views and Deck Plan of a Small Dipper Dredge with Bank Spuds,” from Prelini, *Dredges and Dredging*, 153.

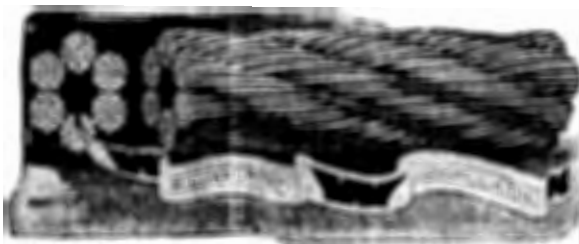


Image 14 (bottom): “Advertisement for Williamsport Wire Rope Co.,” from *Steam Shovel and Dredge*, 32, no. 3 (March 1922): 129. Steel cable, or wire rope, wrapped around the hoisting engine’s drums and supplied the dredge with movement of its dipper and boom.

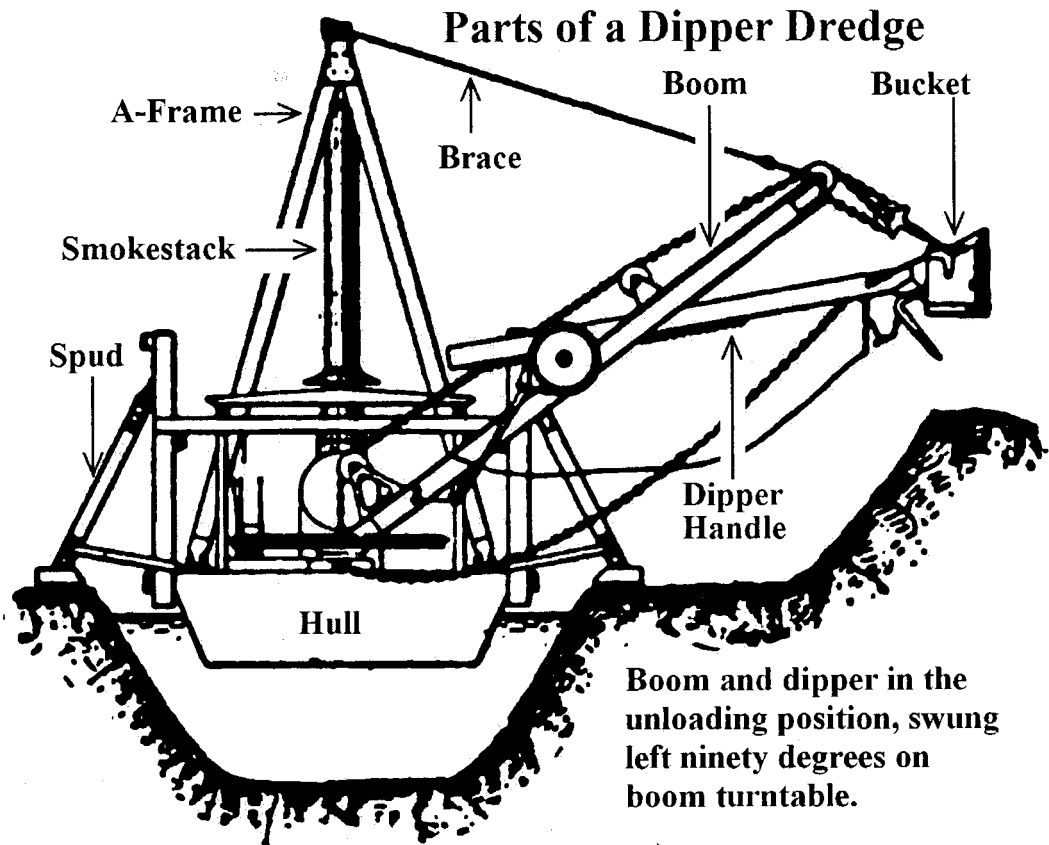


Image 15 (top): "Side and End Views and Deck Plan of a Small Dipper Dredge with Bank Spuds," from Charles Prelini, *Dredges and Dredging*, 153.

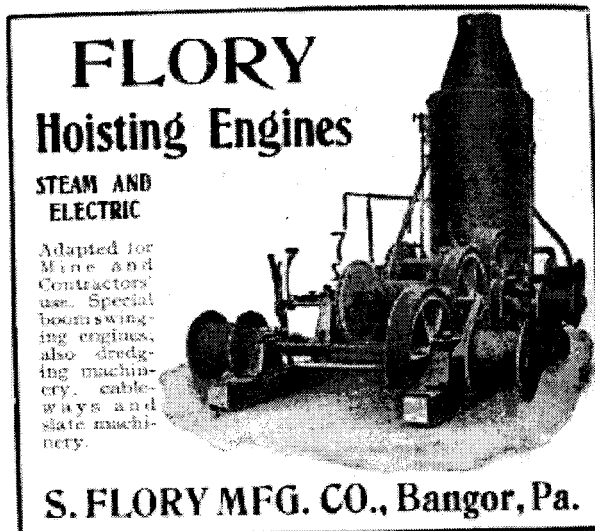


Image 16 (bottom): "Advertisement for Flory Hoisting Engines," *Engineering and Contracting*, 29, no. 1 (January 1908): 4.

The boom served two purposes. First, the dipper arm and bucket were mounted to the boom. Secondly, disposal of excavated material on the riverbank was possible only by swinging the boom ninety degrees to the right or left. A rotating turntable at the base of the boom swung the loaded dipper bucket from the center position over to the bank.¹⁰ Movement of the boom was accomplished with steel cables run through a series of drums and pulleys. To drop material on top of a riverbank eleven feet deep and forty feet wide, an approximate boom length between thirty and thirty-five feet was needed. Compared to hauling it away, dropping the excavated material right on the bank saved time and made operating the dredge more cost effective.

Steam engines powered all movement on the dredge boat. Larger machines used many engines, each powering an individual part; an engine each for hoisting (raising) the dipper, backing (lowering) the dipper, swinging the boom right, swinging the boom left, and the movement of each spud. More expensive models were outfitted with electric lights for illuminating the worksite at night, and some even had fans to help fight the summer heat. On a smaller boat like Lana's, two engines most likely did all the work: one engine for hoisting and backing the dipper, and one for swinging the boom right and left.¹¹ An elaborate system of wire rope (steel cable), drums, and pulleys linked implement with engine to create movement. Rapid movement of wire rope through the pulleys and around the drums created a potentially hazardous amount of heat friction, which required constant supervision and maintenance. Proper lubrication of the drums and pulleys prevented snapped cables, work stoppages, and injured crewmen.

¹⁰Prelini, *Dredges and Dredging*, 154.

¹¹Wright, *Excavating Machinery Used For Digging Ditches And Building Levees*, 10.

The backbone of the entire setup was the A-frame. Much like the mast of a ship, the A-frame was the tallest part of the dredge. It had to be tall in order to provide the leverage necessary to move the dipper and boom. Wire rope wound around the drums ran upward and overtop the A-frame, thence to a pulley fastened to the dipper arm. The A-frame also supported the immense weight of the boom. A circular metal fitting called a gudgeon connected the boom to the A-frame via a brace.¹² The gudgeon allowed the boom to swing side-to-side on the turntable and unload excavated material while staying secured to the A-frame. Although it had no moving parts of its own, the A-frame supported the movement of all other parts of the dredge.

Steam from a boiler supplied power to the engines. To offset the immense weight of the vessel's bow, the boiler, firebox, water-tank, and coal-bunker were located at the stern. Boiler technology ranged in price and efficiency, but small dredges typically used the "locomotive firebox type."¹³ Contractors preferred this style because it was cheap and easy to clean. Water was the lifeblood of any boiler, and the quality of that water greatly influenced dredge performance. Unlike the clear, tank-fed water used in locomotive steam engines, the muddy water of the Skunk was less than ideal for use in a boiler. Already turbid from increased field runoff, its quality was further sullied by the agitation of sediment caused by the dredge work. Dirty water foamed in the boiler, clogged injectors, and prevented the buildup of adequate steam pressure. Some preventative measures existed, such as the installation of a "skimmer" inside the boiler, which skimmed off the foam and dirt that collected on the water's surface.¹⁴ The use of two separate feeder valves

¹²Ibid., 11.

¹³Ibid., 10.

¹⁴Advertisement for Buckeye Boiler Skimmer, *Steam Shovel and Dredge*, May 1922, 325.

to the boiler allowed work to continue if one became clogged with dirt.¹⁵ Despite technology to help keep boilers clean, dirty water was a problem with no real solution for the Lana dredge and simply had to be tolerated.

The boiler produced energy, but all of it was needed to hoist the dipper and swing the boom. Nothing was leftover to propel the vessel through the water. Much like a barge being pushed up and down the Mississippi River, tugboats assisted dredge movement on navigable waterways. But that was not an option on the non-navigable Skunk, where the water was barely deep enough for the dredge itself. Much like the necessity to pump muddy water into the boilers, dredge movement required adaptation to this particular river environment. Charles Prelini described the peculiar way that a dipper dredge moved:

When the dredge is to be moved so as to attack a new bed, the spuds are lifted, the dipper handle fully extended is lowered so as to engage the soil as in dredging, the handle is then withdrawn and the effort causes the vessel to move forward. By repeating the same operation the machine slowly advances to the required point. Then the spuds are lowered again, the boat is made firm and the dredging operations are resumed. It takes less than two minutes to lift the spuds, to move to a new place to be dredged and lower the spuds again.¹⁶

Lifting of the spuds put a disproportionate amount of weight at the bow, and the hoisting and backing of the dipper then allowed the dredge to clumsily flop its way forward. In essence the ever-present problem of imbalance provided an unlikely solution to dredge propulsion.

Bucket size determined how much work a dredge could do. Measured in cubic yards, bucket size ranged from one cubic yard on the smallest machines to ten cubic yards and beyond on the largest, and the Lana dredge was on the smaller end of that scale. The anticipated scope of the Skunk River Ditch provides more clues about the size of the Lana

¹⁵Wright, *Excavating Machinery Used For Digging Ditches And Building Levees*, 11.

¹⁶Prelini, *Dredges and Dredging*, 157.

dredge's bucket. The engineer's report called for a dredge capable of excavating 70,000 cubic yards of material per month.¹⁷ Standard practice of a dredge crew was to operate twenty-four hours a day with two or three shifts of crewmen. Working the entire time during a thirty day month, without a single work stoppage, the respective daily and hourly quotas were then 2,333 and 97 cubic yards. In ideal conditions the average output of a dipper dredge was one bucket per minute.¹⁸ All the preceding factors then imply that the Lana dredge excavated approximately 1.6 cubic yards of material per minute, which required a bucket between 1.5 and 2.0 cubic yards in size.

In theory bucket size determined the productive output of a dipper dredge, but in practice environmental conditions more greatly affected the pace of work. Sandy soil moves easier than clay, which sticks to the bucket and must be removed by hand. Large rocks and stumps require additional attention, and prevents the bucket's full capacity be used. In terms of water depth, extremely low levels hindered dredge movement and flood-like levels presented danger to crew and machine alike. The best laid plans for completing a job on time represent operating in ideal weather and soil conditions, but the pace was more accurately determined by the river's actual environmental factors.¹⁹

Charles Prelini stated that "less than 10 men" were needed for the operation of a small dipper dredge.²⁰ Evidence suggests that the Lana outfit employed approximately that same number of crew. The South Skunk project superintendent, Bob Chard, managed the job on site, and was even accompanied by his wife and children. Chard managed crew shifts, answered to the Lana Company's owner, and kept in contact with the County Board

¹⁷"Engineer's Report," filed July 1911, *Drainage Records Book No. 1*, 84-88.

¹⁸Prelini, *Dredges and Dredging*, 157.

¹⁹*Ibid.*, 65 and 158.

²⁰*Ibid.*, 57.

of Supervisors. During warmer months the Chards lived in a small boathouse that sat near the dredge and they boarded with local families during the winter.²¹ It is possible that Chard's wife worked as a cook and ran a crew cafeteria from the boathouse. The Chards spent so much time in the small town of Reasnor that when they moved back to the river the local newspaper reported "their many friends [were] sorry to have them move away again."²²

Underneath Superintendant Chard was the dredge engineer, Ole Ferndaum. Ferndaum's responsibilities were running the dipper and keeping the machine in working order. Further down the chain of command was dredge teamster John Morrow, who ran a team of horses and wagon that supplied the dredge with coal. After that, six unnamed stokers assisted in the removal of bridges.²³ Chard and Ferndaum were employed by the Lana Construction Company prior to working on the Skunk River ditch and represented the crew's skilled labor. The local labor pool may have supplemented the crew with unskilled workers that did the jobs of stoking coal, greasing the machinery, or working night shifts. The exact crew compliment of the Lana dredge is unknown, but evidence indicates there were at least ten people involved: superintendant Bob Chard, Chard's wife, engineer Ole Ferndaum, teamster John Morrow, and six unnamed stokers.²⁴

²¹Larger dredges included crew quarters and a cafeteria, but lack of space on the Lana dredge prohibited this luxury. Instead, crew amenities were located in a small boathouse that sat near the dredge.

²²*Newton (IA) Daily News*, "The Reasnor News: Have Taken Possession of Boat House Near the Dredge," March 31, 1915.

²³*Newton (IA) Daily News*, "Big Skunk River Dredge Will Pass Metz Today," July 30, 1913.

²⁴*Ibid.*

Dredging the Skunk

The Lana dipper dredge began straightening the Skunk River in early September 1912 and finished the work in June 1915 (see Table 7).²⁵ In mid-September the *Newton Daily News* reported that seventy-five rods of work, or slightly less than one quarter of a mile, was already completed. Work was done around the clock with three shifts of workers to expedite the process.²⁶ Echoing predictions previously made by Engineer Byers, the newspaper mentioned two years as the job's approximate timeframe.

Interestingly, straightening of the South Skunk did not begin at the western line with Polk County. Instead work commenced in section six of Mound Prairie Township, or approximately one mile to the east of the town of Colfax and approximately six miles downstream from the county's western border.²⁷ Although determined by the petitioners, the starting location was ideal because existing coal mines adjacent to the river easily supplied the dredge's boiler with fuel. The nearby Chicago & Rock Island rail line also gave the crew quick access to the river and made moving the hull timbers and seventy tons of machinery much cheaper than hiring several teams of horses to haul them overland by wagon from Colfax.

²⁵*Newton (IA) Daily News*, "New Skunk River Ditch Started; No Stop Till It's Completed," September 12, 1912; *Newton (IA) Journal*, "To Straighten The South Skunk Channel in Mahaska County," June 30, 1915.

²⁶*Newton (IA) Daily News*, "New Skunk River Ditch Started; No Stop Till It's Completed," September 12, 1912.

²⁷"Engineer's Report," filed July 1911, *Drainage Records Book No. 1*, 84-88.

Table 7: Timeline of Events for Straightening of Skunk River

Year	Month	Event
1912	September	Lana dredge boat begins work near Colfax
1912	October	Polk County Board of Supervisors approve plan to straighten Skunk River directly upstream from Jasper County
1912	October	Lana dredge boat encounters unspecified breakdowns, work stoppages
1912	December	Lana dredge boat encounters snag and sinks in the river, work stopped for six months, 2 miles of 20 mile project completed
1912	December	Petition filed to straighten North Skunk River in Jasper County, Engineer Byers begins survey of proposed area
1913	August	Lana dredge reaches Metz Bridge, 6 miles of 20 mile project completed
1913	November	Lana dredge reaches Monroe Bridge, 10 miles of 20 mile project completed
1913	November	Marion County Board of Supervisors approve plan to straighten Skunk River directly downstream from Jasper County, allow Lana dredge to advance across the Jasper County line
1913	December	Sand fills in section of new Skunk River Ditch, dynamite used to blast it open
1914	January	County Engineer Byers files official report for North Skunk River Ditch
1914	February	Low water and ice on Skunk River cause Lana dredge to stop digging
1914	March	Due to lack of support, Jasper County Board of Supervisors dismiss plans to straighten the North Skunk River
1914	April	Lana dredge reaches Reasnor Bridge, 14 miles of 20 mile project completed
1914	May	Lana dredge reaches Newton & Marion Railroad Bridge, 15 miles of 20 mile project completed, dredge disassembled and overhauled
1914	November	Lana dredge reaches Byers Bridge, 18 miles of 20 mile project completed
1914	November	Engineer Byers resigns from office in Jasper County, accepts similar position in Mahaska County, surveys Skunk River for a straightening project there
1914	December	Drainage ditch completed, Lana dredge reaches line between Jasper and Marion Counties, continues to straighten river in Marion County
1914	December	Mahaska County Board of Supervisors approve plan to straighten South Skunk downstream from Jasper County, allow Lana dredge to advance across Marion County line
1915	June	Jasper County Board of Supervisors formally accepts work done by the Lana Construction Company on the Skunk River

Almost immediately the boat ran into problems. Unspecified breakdowns were reported within the first two weeks, and by early October work was at a standstill. The newspaper reported that “the machine, it seems was not quite strong enough for the work and when the test came many of the parts gave way, causing much inconvenience and much outlay of capital for the repairs.”²⁸ On the first of October, Engineer Byers visited the jobsite to witness the re-starting of the work. Those paying attention to the dredge’s progress were displeased by such early setbacks, and Byers’ inspection of the dredge that day was done to ensure the petitioners that the Lana Construction Company could fulfill the contract.²⁹

The woes continued for the dredge crew. In early December, barely two months after overcoming the first series of breakdowns, the dredge boat hit a snag and sunk in the middle of the river. According to an eyewitness account printed in the *Colfax Clipper*, “the boat sank till the fire under the hoisting engine boiler was extinguished.” In other words, the entire vessel and all seventy tons of machinery on board sunk in only a few feet of water.³⁰

After the sinking Lana Company superintendant Bob Chard estimated that at least one month was needed to get the project moving forward again, but in the end the repairs took over six months.³¹ With the exception of a boiler explosion, raising a sunken dredge was perhaps the costliest of all accidents. Getting it off the riverbed was an expensive, time consuming, and laborious process. To raise it, workers constructed a copper dam around the hull. With the dam in place, stationary steam engines pumped the water away

²⁸ *Newton (IA) Daily News*, “Work Resumed On The New Skunk River Near Colfax Today,” October 1, 1912.

²⁹ *Ibid.*

³⁰ *Colfax (IA) Clipper*, “Cold Facts,” December 12, 1912.

³¹ *Newton (IA) Daily News*, “Big Dredge Near Colfax Encounters Snag And Sinks In River,” December 9, 1912.

from the boat, making it possible to remove all the parts, clean or replace them, and then fasten them on a newly constructed hull.³²

The most common snags encountered by small dipper dredges were tree stumps, and the location of the Lana dredge's sinking suggests a similar fate. The lowlands east of Colfax where the dredge sank were (and still are today) covered with a significant amount of timber. While cutting out a new channel from that swampy timberland the dredge most likely hit a large tree stump that tore a hole in the bottom of the hull. In more expensive operations a snag-pulling machine would have gone through the area first and removed any troublesome tree stumps, but the Lana Company's bottom line was too low for that luxury and they paid for it dearly.³³

Despite early setbacks it was clear that "drainage fever" had swept across the county. That fall the county's second largest waterway, the North Skunk river, came under consideration for straightening. Slightly smaller than its southern counterpart, the North Skunk River is a second branch of the river that also runs through Jasper County. The north and south branches meet about ninety miles downstream from Newton in Keokuk County, and then flow another ninety miles before entering the Mississippi River.³⁴

Meanwhile, the Lana dredge was raised and repaired during the winter months of early 1913, and by that summer again advanced southward toward the county line. Although the exact day that work resumed is unknown, in early July the newspaper reported that the dredge was halfway between Newton and the starting point near Colfax. By the beginning of August the dredge approached its first planned obstacle, an iron truss

³²*Colfax (IA) Clipper*, "Cold Facts," December 12, 1912.

³³Prelini, *Dredges and Dredging*, 54.

³⁴While initial efforts began in November 1912, the North Skunk River was not straightened during the time period covered in this project. In addition to personal contact with the North Skunk, the author's claim is based on current satellite imaging that shows the river was altered from its natural, crooked state.

bridge spanning the river near the small community of Metz. The bridge was about four miles downstream from where the dredge caught the snag.³⁵ In eleven months the dredge advanced approximately six and one half miles, or about half as far as anticipated.

Passing beyond bridges was always a difficult undertaking. High clearance of the mast-like A-frame prevented the dredge from passing safely underneath the bridge. Superintendant Chard had two options to make it happen; either the dredge could be dismantled, moved piece-by-piece around the bridge, and reassembled directly downstream, or they could use the dipper and boom to temporarily move the bridge off to one side. Both options had pros and cons associated with them. Taking the dredge apart was safer, but much more time consuming. Moving the bridge was faster, but avoiding damage to the bridge or the vessel required a high degree of skill from the engineer. Because of the bridge's small size and the necessity to avoid any further work stoppages, superintendent Chard and the chief engineer, Ole Ferndaum, chose the latter option.

A *Newton Daily News* correspondent spoke with Bob Chard about the process for moving the bridge:

All will be in readiness at 3 o'clock p.m., a great steel hook will be dangling at the end of a wire cable which runs through the pulley in the great forward beam. Two short blasts from the engine whistle will be the signal to start. The hook will be lowered and made fast in the bridge. There will be a tightening of cable, a creak of the pulley, a roar from the exhaust and the steel structure which has stood the ice and floods of the past ten years will be slowly lifted from its bed and swung a foot up stream where a wooden track is made ready for it. Six nimble stokers will drop the greased rollers under it, the great beam will be swung to the left and the bridge will slide back as easily as a housewife moves the sofa on a parlor floor. The boat will pass the opening and swing round to the left, a great cable will be fastened to the bridge and passed through a pulley anchored to a clump of seven oak trees directly in line. The machinery

³⁵*Newton (IA) Daily News*, "Dredge Will Pass Metz Bridge This Afternoon," August 1, 1913.

will then be started and the cable wound around a drum, drawing the big bridge back in place.³⁶

In essence the plan was to lift the bridge from its foundation and move it off to one side just far enough so that the dredge's A-frame could pass beside it, then use the boom's pulley and turntable to pull the bridge back into place.

Although concerned that quick execution of their plan might be hindered by the low water level around the bridge, both Superintendent Chard and Engineer Ferndaum had experience moving bridges and went ahead with the plan. Chard boasted to the newspaper reporter that the year before he moved a bridge similar in size to the one at Metz in thirty-four minutes. Indicative of his confidence, Chard even made a friendly wager with Ferndaum on the amount of time needed to do the job.³⁷ In the end, the bridge was successfully moved and the dredge continued downstream to the southern county line.

Moving the bridge proved quite a spectacle. All three members of the county Board of Supervisors, as well as many other onlookers, traveled down to Metz to witness the event. The passing of the Metz Bridge in front of a large crowd provided the dredge crew with their first bit of positive publicity since the work began. Prior media coverage highlighted only breakdowns, the infamous sinking, and worries if the crew was capable of fulfilling their side of the lucrative contract. The positive press they gained from moving the Metz Bridge improved their reputation. With the first planned obstacle successfully passed, the dredge moved toward Newton and into areas of the county that were much more accessible to the general public than the remote stretch of river where they had been

³⁶Newton (IA) Daily News, "Big Skunk River Dredge Will Pass Metz Bridge Today," July 30, 1913.

³⁷Ibid.

working. As a result, many more people took advantage of the opportunity to see the dredge at work.³⁸

After passing Metz Bridge the Lana dredge steadily advanced four miles downstream to the next obstacle, a bridge that connected Newton with the town of Monroe. Situated near the county's southern border, Monroe was Jasper's oldest town. Prior to the introduction of the railroad into the area in the late 1850s nearly all incoming traffic funneled through Monroe, and by 1912 the road connecting it with Newton experienced ample traffic.³⁹ Where the road crossed the Skunk was an ideal place for passers-by to easily view the dredge at work.⁴⁰

The Monroe Bridge marked the project's halfway point, and the dredge reached it in early November 1913. Despite all the delays of the first year, the *Newton Daily News* lauded that "the [dredge's] progress has been as rapid as could be expected," and that since the sinking, "the machine has kept plowing ahead with very little loss of time."⁴¹ Thirteen months after starting, the dredge had completed ten miles of the twenty mile course.

The summer of 1913 was very wet, which caused heavy and high flows in the river. Using the extra water to their advantage, the dredge crew quickly advanced three and one half miles. The onset of dry winter weather, however, slowed down the dredge considerably. At one point in late December, a newly developed sand shoal near Metz dammed the channel. The shoal required removal, but even in wet weather, moving the dredge back upstream was hardly an option. As a result the crew blew the shoal open with

³⁸*Newton (IA) Journal*, "Will Reach Monroe Bridge Sunday," November 14, 1913.

³⁹James Weaver, ed., *Past and Present of Jasper County, Iowa*, 54.

⁴⁰*Newton (IA) Daily News*, "Dredge On South Skunk Is Making Excellent Progress," November 7, 1913.

⁴¹*Ibid.*; *Newton (IA) Journal*, "Will Reach Monroe Bridge Sunday," November 14, 1913.

dynamite.⁴² About a month later, in February 1914, the river froze over and halted work for several days. Between mid-November 1913 and early March 1914 the dredge progressed only two miles on account of the river's winter environment.⁴³

Spring's arrival quickened the pace. Taking advantage of higher, freshet-induced water levels, the dredge crew advanced two miles in about five weeks, and by mid-April had reached the next waypoint, a bridge near the small community of Reasnor. Unlike the Metz and Monroe bridges, the dilapidated crossing at Reasnor needed replacement. Much to the approval of Chard and Ferndaum, Engineer Byers had the bridge removed in concert with the dredge's passing. To secure Reasnor's residents with access to the Newton road a temporary crossing was constructed nearby.⁴⁴

For the first time in the project's twenty month lifespan the dredge was located within the confines of a town, which meant many curious people came to have a look at the machine. One day in mid-April, while the dredge worked very close to the road, over three hundred people (outnumbering the town's population) converged to see Reasnor's new "leading attraction."⁴⁵ Car loads of people from Newton and Monroe passed through Reasnor with regularity, and a local train depot on the north-south running Newton & Marion Railroad line brought in spectators from points beyond the county. Reasnor provided an easily accessible location for anyone interested in viewing the dredge.⁴⁶

The Lana dredge interested so many people for two reasons. First, the work inspired similar projects in neighboring counties. The fact that landowners in Marion, Mahaska, and Polk Counties made similar petitions shortly after work in Jasper County

⁴² *Newton (IA) Daily News*, "Dynamite Used To Open Up New River Channel," December 31, 1913.

⁴³ *Newton (IA) Daily News*, "Dredge Is At Work Again," February 23, 1914.

⁴⁴ *Newton (IA) Daily News*, "The Reasnor News: Temporary Bridge Built Across River," April 13, 1914.

⁴⁵ *Newton (IA) Daily News*, "Dredge Boat Interesting Many People Hereabouts," April 10, 1914.

⁴⁶ James Weaver, ed., *Past and Present of Jasper County*, 344.

began suggests that the Lana dredge was viewed by some as a business demonstration. Second, the machine was a technological novelty of the modern age that also appealed to those without a financial stake in the work. In short, the dredge exemplified a brand of progress never before seen in Jasper County.

In May 1914 the big dredge reached the railroad bridge of the Newton & Marion Railroad and stopped. Wear and tear caused by over a year of continuous operation required that the vessel be disassembled for \$800 in repairs.⁴⁷ By November 1914, seven months after being taken down for repairs, the dredge had resumed operation and worked about two miles from the county's southern line. All that stood in the way of a finished job was a small bridge, which was removed and passed by without incident. In mid-December 1914, twenty-eight months after starting, the big dredge passed over the Jasper County line and continued digging downstream into Marion County. The final County Supervisors meeting regarding the Skunk River Ditch in Jasper County took place in June 1915, when the work done by the Lana Construction Company was officially deemed satisfactory.

In a little over two years the crooked, untamable South Skunk River, "with sloughs detested from Maine to California," was transformed into a straight ditch.⁴⁸ The idea behind it was simple, to make more farmland in an area renowned for its crop producing potential. By 1915 the sufficiently cultivated upland prairies were producing bonanza yields of corn and soybeans, but up to that time the swales and sloughs on Skunk bottom had resisted the application of commercial agriculture. Shorted by about half, the thirty-

⁴⁷*Newton (IA) Daily News*, "The Reasnor News: Dredge To Be Taken Down This Week," May 4, 1914.

⁴⁸*The History of Jasper County, Iowa, Containing a History of the County, its Cities, Towns, &c.* (Chicago: Western Historical Company, 1878), 320.

nine crooked miles of Jasper's Classic Skunk was straightened into the Skunk River Ditch.⁴⁹

Efforts to straighten the Skunk in Jasper also affected the river outside the county. Upstream to the west in neighboring Polk County, a large landowner named John Kimberly spearheaded a petition to extend the project westward to the Jasper county line. Work was done on that section of river years before, but Kimberly "stated in the most emphatic language that he wanted the old ditch dug deeper and placed in first class shape."⁵⁰ The need to improve roads and bridges through the bottoms also influenced official action. In October, the Polk Supervisors approved a plan to straighten the Skunk through the southeast corner of the county so that their ditch ran to the line with Jasper.⁵¹ The straightening efforts in Polk County led to a seamless union with work done in Jasper, and soon afterward similar petitions were filed in county courthouses further downstream.

The move to straighten the South Skunk in Jasper County demonstrated to landowners in neighboring counties that the work was viable, and in the end that ripple effect expanded outward through six counties. About the same time that the Lana dredge reached the Monroe Bridge, an interested group of landowners in Marion County filed a petition to channelize their section of Skunk River, which flowed six miles through the county's northeast corner before entering Mahaska County. As a result, the Lana dredge simply continued working after it passed over Jasper County's southern border.

Not long after news of the Marion extension was reported, petitioners in the next county downstream, Mahaska, filed a petition to straighten their section of the Skunk River. Following the precedents of their counterparts in Jasper and Marion Counties, the

⁴⁹*Newton (IA) Journal*, "South Skunk Work Completed February First," November 20, 1914.

⁵⁰*Newton (IA) Daily News*, "Skunk River Ditch May be Extended," May 28, 1912.

⁵¹*Newton (IA) Daily News*, "Polk County Will Straighten Out Skunk River," October 8, 1912.

Board of Supervisors in Mahaska also hired W.F. Byers as project engineer and contracted the Lana Construction Company to do the dredging.⁵² In the end, the South Skunk River was straightened into a ditch that ran in nearly a straight line from its source in Hamilton County, then down through the counties of Story, Polk, Jasper, Marion, and finally Mahaska.

The Lana dredge boat represented a technological innovation developed specifically for the purpose of moving large-amounts of earth within a riparian environment. Improvements in agricultural technology transformed the uplands and lowlands alike, but the environmental differences between the two allowed the former to be altered much more quickly than the latter. When dredge boat technology reached central Iowa, the wettest, most inaccessible parts of the prairies were altered in a very short amount of time, and the execution of that work was the final step taken by humans to put as much land under cultivation as possible.

In 1922 a poem appeared in *Steam Shovel and Dredge* magazine called *Ode to the Steam Shovel*. Told from the steam shovel's perspective, the poem romanticizes about the ability of a steam shovel to create a utopia for humans. Guided by a "skilled and kind" operator, the steam shovel was capable of transforming the "desert into a garden spot and the Everglades into an orchard plot."⁵³ In addition to illuminating the relationship between humans and technology that existed in the early twentieth century, the significance of the poem lies in its ability to show a twenty-first century reader that at that time major

⁵²*Newton (IA) Daily News*, "Skunk River Will Be Straightened Through Mahaska County: New Sharon Real Estate Man Investigating Cost Of Ditch," November 24, 1914; *Newton (IA) Journal*, "Engineer For Mahaska Ditch," December 2, 1914.

⁵³"Ode to the Steam Shovel," *Steam Shovel And Dredge*, July 1922, 14.

environmental alterations, such as straightening a river, were widely accepted, morally correct, and poetically remembered.

Alterations made to the Skunk River bottoms by the Lana dredge boat are still clearly visible in the twenty-first century. Since initial settlement by whites, the wet prairie landscape of Jasper County, and indeed all throughout the Midwest, was gradually altered to suit the demands of commercial agriculture. Someone visiting central Iowa in 2012 would not view the terrain in terms of its environmental diversity, but instead quickly notice the striking uniformity of neatly arranged fields and farms. The uniformity seen in formerly diverse wet prairies was part of a complex process that was a long time coming, and dredging technology played a significant role in making that perception a reality for all successive generations of people.

CHAPTER 4: THE MARK OF PROGRESS

A few years ago, say 12 years, cattle of every description run on the prairie. Now there is scarcely a patch of wild grass, excepting on Skunk River bottom. Twelve years ago a good share of the farms were open to the road. Such is the mark of progress.¹

-Anonymous Jasper County Farmer, 1881

This chapter examines the Skunk bottom-land before and after the river was straightened. There is no question that the introduction of intensive agriculture to uncultivated land alters the terrain in profound ways. Drainage and straightening changed some environmental characteristics of the wet prairies, but other features resisted human manipulation and can still be observed today.

The most important source for measuring environmental change over time is the Skunk River itself. Observing how river environments were viewed throughout the span of written history reveals a great deal about how that environment changed over time. Because the written record of human habitation in the American Midwest is fairly recent, information on that topic is limited to the last three centuries. The wet prairies spanned much of what is known today as the American Midwest, and this narrative incorporates source material from beyond Jasper County that notes environmental features of similar river environments in the region. The story that unfolds is an unbroken chronology of human interaction with the wet prairie rivers that covers the last three hundred years.

¹*Newton (IA) Journal*, "County Notes: Wild Cat Items," September 22, 1881.

Explorer Accounts

To understand the change over time of the region, the earliest descriptions of the area need to be examined. During the mid-seventeenth century, the Upper-Midwest and region surrounding the Great Lakes was adequately traversed and documented by the French. Foreshadowing the region's new viable professions, a Jesuit priest, Jacques Marquette, and a trapper/explorer, Louis Joliet, are credited as the first Europeans to set foot on Iowa soil and write about it. In late June 1673, right after pioneering into the unexplored waters of the upper-Mississippi River, Marquette and Joliet's party stopped on the river's western shore, near the mouth of the Des Moines River. The scant personal accounts of the event reveal little about the landscape, just that the two men came upon a grassy meadow.²

Later French accounts offer more description.³ Forty-seven years after the Marquette and Joliet Mississippi River expedition, a Jesuit priest named Father Charlevoix traveled by river through much of the wet-prairie regions of Michigan, Indiana, Illinois, and Missouri.⁴ Destined for the mouth of the Mississippi River at New Orleans, while traveling he sent several highly descriptive letters back to France that give detailed accounts of his route, contact with Native Americans, distances between encampments, and the wet prairie landscape.

²*The History of Lee County, Iowa, Containing a History of the County, its Cities, Towns, &c.* (Chicago: Western Historical Company, 1879), 323.

³By the mid-seventeenth century exploration and documentation of New France, or Louisiana, proved abundant enough that a variety of descriptions emerged. Because transportation at that time relied almost exclusively on rivers, the existing accounts provide valuable information about the condition of the territory's wetland environments as they existed prior to intensive cultivation. When compared to the present day, early explorer accounts reveal the change and continuity in wet prairie environments such as the Skunk River.

⁴Charlevoix, *Letters to the Dutchess of LesDiguieres; Giving an Account of a Voyage to Canada, and Travels through the vast Country, and Louisiana, to the Gulf of Mexico* (London: R. Goadby, 1763).

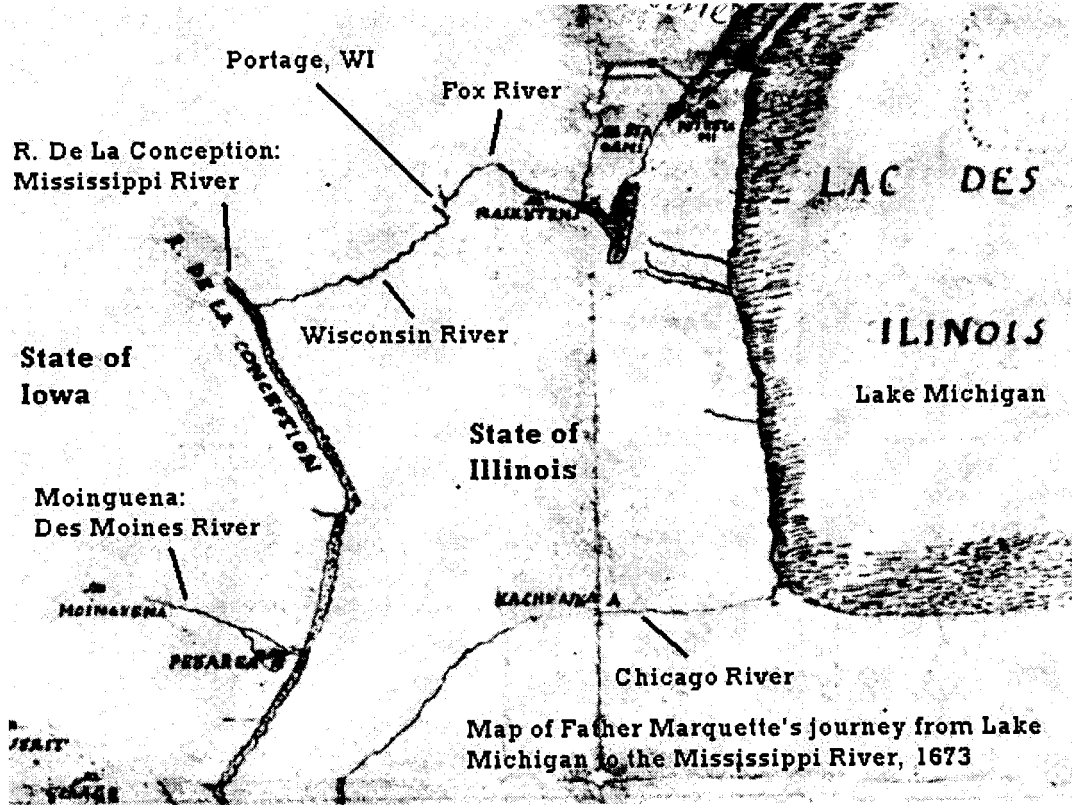


Image 17: "First map of the Upper-Mississippi River, recounting Marquette's 1673 voyage." Before the train and automobile, rivers were the primary means of transportation in the Mississippi River Valley. Knowledge of the region started with its rivers. Marquette's map reveals a great deal of knowledge gathered by the region's Native American tribes, and the publication of this map passed that information to Europeans.

Jacques Marquette, "Autograph map of the Mississippi or Conception River, 1673," *Jesuit Relations and Allied Documents*, Vol. 59, ed. By Reuben Gold Thwaites (Cleveland: Burrows Bros. Co., 1896-1901). Image courtesy of the Wisconsin Historical Society, used with permission.

Charlevoix provided the following generalization of how the native peoples of the prairie interacted with their environment:

They dwell commonly in Meadows, under Tents made of Skins, and well wrought: They live on wild Oats, which grow in Abundance in their Marshes and Rivers, and by hunting, especially of the Buffaloes that are covered with Wool, and which are in Herds of Thousands in their Meadows: they have no fixed Abode, but travel in great Companies like the Tartars, and never stay in one Place any longer than the Chance detains them.⁵

Based on his description, the wild oat was a major food staple that grew in the abundant wetlands. Products of the swamps gave the native people sustenance, but only for the warm months of the year. Rivers and marshes froze over in the winter, leaving only the huge spans of grassland accessible for food. Without a means to produce food from the soil the wet-prairies were only habitable for part of the year.

From a French settlement near the mouth of the St. Joseph River in present day Michigan, Charlevoix traveled south to the Illinois River, which was the traditional path long used by the natives. This route took them southward along the eastern shores of Lake Michigan to the River *Chicagou*, and easy access to the Illinois River. But it was early autumn and low summer rainfall rendered that route impassable, so instead they traveled up the St. Joseph River and from present day South Bend, Indiana portaged their *pettiaugres* (dugout canoe) overland into the *Theakiki* River, a tributary of the Illinois.⁶

Charlevoix's journey from the source of the Kankakee to the mouth of the Illinois River carried him through the wet prairies of central Illinois. Along the way he noted

⁵Ibid., 110.

⁶The Theakiki River is known today as the Kankakee River, which begins in northwestern Indiana and flows in a southwesterly direction into the Illinois River; Charlevoix, *Letters to the Duchess of LesDiguieres*, 272, 282.

numerous buffalo, and “river banks covered with Wild-Fowl, fattened with Wild Oats, which were then ripe.” Timber bordered the banks on both sides of the upstream portions, and further downstream the river became shallower as it widened, indicating that eroded soil actively silted in the riverbed. At this point the river was less than a few feet deep and in some places non-navigable to even the smallest vessels.⁷

Downstream from the narrow, timber-lined Kankakee, grassy meadows covered the banks of the Illinois. Here Charlevoix observed sparse timber and a dense jungle of prairie grass:

In this route we see only fine meadows, with little clusters of trees here and there, which seem to have been planted by hand; the grass grows so high in them, that one might lose one’s self amongst it; but every where we meet with paths that are as beaten as they can be in the most populous countries; yet nothing passes through them but buffaloes, and from time to time some herds of deer, and some roe-bucks.⁸

Abundant rainfall in the wet prairies produced grass that grew exceptionally tall and thick. The densest grass was inhospitable to humans, but provided an ideal habitat for prairie herbivores like buffalo and deer.

After passing through a lowland meadow along the Illinois, Charlevoix noted riverbanks that were very low. This suggests evidence of soil erosion and siltation, which causes a river channel to widen its banks instead of deepen its channel. He credited the lushness and height of the grass to seasonal flooding.⁹ Flooding deposits silt in the bottomlands, which in-turn invigorates the soil and allows for the exceptional growth of plant life. The extensive grass growth made the area attractive to buffalo and deer.

⁷Charlevoix, *Letters to the Dutchess of LesDiguieres*, 279-280.

⁸Ibid., 280.

⁹Ibid., 309.

Aside from riparian features, Charlevoix carefully identified locations of natural resources, including the presence of coal, copper, salt, sandstone, lead, and even an unlikely account of silver. His description of the Des Moines River, or *la Riviere Moingona* as he called it, included “a great cape, which makes the river wind; the water of which...is red and stinking. It is assured that many mineral stones have been gathered on this cape, and that antimony has been brought hither to hence.”¹⁰ The red colored rocks he referred to were sandstone formations that two centuries later became the site of a large quarry and coal mining operation on Iowa’s principal inland waterway. The Red Rocks on the Des Moines River also served as a landmark for incoming settlers, and in the twenty-first century is the site of a dam and reservoir called Lake Red Rock. Charlevoix’s reference to natural resources indicates that natives and French alike were aware of the site’s material value.¹¹

Published 1726, the *Dictionnaire Universel De La France* included another early description *La Riviere Moingona*:

A rather large river in Louisiana [Territory]. Its source is in the south of the land of Tintons, and, after a path of over a hundred leagues, it arrives at the Western strip of the Mississippi [River], forty leagues above the confluence of the Missouri [River], after having watered beautiful countryside and large prairies that are heavily frequented by wild oxen and cows.¹²

The picture that emerges is a grassy expanse, dotted with patches of timber, inhabited by indigenous people, and having a high concentration of wild-oxen, or buffalo. It is possible the description included the word *belles*, or beautiful, because the author likened the

¹⁰Ibid., 295.

¹¹Ibid., 310-311.

¹²C. Saugrain, *Dictionnaire Universel De La France Ancienne Et Moderne, Et De La Nouvelle France* (Paris: 1726), 1289-1920. Translation provided by Dr. Michael Behrent, Appalachian State University, Dept. of History, 2012.

landscape to a French pastoral scene. Imagery from the time period (see Image 18) depicts the wet prairies as a vibrant place with lots of wildlife.



Image 18: "Planche I." A seventeenth century French image of the Louisiana Territory, depicting natives dwelling in an idyllic meadow, very few trees, and wetlands in the background. The air and water are both teeming with wildlife.

"Planche I," French image of Louisiana depicting natives dwelling in a grassy meadow, with wetlands in the background, artist unknown, from Jean Frederic Bernard, *Relations De La Louisiane, Et Du Fleuve Mississippi*, Amsterdam, 1720, 12.

In 1766 an English veteran of the French and Indian War named John Carver traveled up the Mississippi River into uncharted regions of present-day Minnesota. He entered the Mississippi from the Wisconsin River, just as Marquette and Joliet had done almost a century earlier. The early portion of his trek passed through the wet prairies of south-central Wisconsin along the Fox River, which linked Lake Michigan's Green Bay with the Wisconsin River. Carver noted the riparian environments around the Fox River:

The country around it is very fertile and proper in the highest degree for cultivation, excepting in some places near the river, where it is too low. It is in no part very woody, and yet can supply sufficient to answer the demands of any number of inhabitants. This river is the greatest resort for wild fowl of every kind that I met with in the whole course of my travels; frequently the sun would be obscured by them for some minutes together.¹³

Carver's observations of low meadows, sparse timber, and abundant waterfowl corroborate the claims of Charlevoix. Carver more aptly evaluated the landscape's potential for agriculture than Charlevoix, even differentiating the uplands and the lowlands.

Exploration of Louisiana Territory remained incomplete at the end of the eighteenth century. After acquiring it from the French in 1803, President Thomas Jefferson made arrangements to further document the region. That year he sent William Clark and Meriwether Lewis on their famous *Corps of Discovery* expedition up the Missouri River, and in 1805 he dispatched Lieutenant Zebulon Pike of the United States Army and a crew of twenty-one men up the Mississippi River on an unsuccessful search for its headwaters. Pike's official accounts of the journey reveal what the wet prairies looked like in the early nineteenth century.¹⁴

¹³Jonathan Carver, *Travels Through the Interior Parts of North America in the Years 1766, 1767, and 1768* (Dublin: Price, et al, 1779), 35.

¹⁴Lieutenant Zebulon Pike, *Exploratory Travels Through the Western Territories of North America: Comprising a Voyage from St. Louis, on the Mississippi, to the Source of that River, and a Journey Through*

In late summer 1805, Pike's crew departed St. Louis in a keelboat seventy feet long. Shaped like a large canoe, the boat's low draft and long, slender design allowed it to move in very shallow water. Although they had a boat suited for shallow water, often times the men were forced to unload their gear and manually push the keelboat over sand shoals that protruded out of the water.¹⁵

Pike's observations of the terrain corroborated earlier descriptions. For example, while stopped near the vicinity of the Skunk River's mouth, Pike noted high grass and a vast expanse of prairie. After passing the mouth of the Iowa River he noted "generally beautiful prairies on the west, and in some places very rich land, with black walnut and hickory timber."¹⁶ After an unsuccessful hunting trip he hiked through "a thick bottom" and "several morasses" before finding his way back to the river.¹⁷

In some ways accounts from Pike's expedition align with earlier accounts of the bottomlands, but there are two major differences. First, Pike makes no mention of buffalo. Although it is possible he chose not to record that information, the glaring absence of any buffalo sighting conflicts with the observations of Charlevoix and Carver, who both saw them in abundance. Foreshadowing the impending transition to cultivated farmland, Pike also observed Indians of the Sac/Fox tribe practicing sedentary agriculture. On the return trip downriver, Pike recorded several villages where corn cultivation supported the population, and even mentioned one instance where crops were produced in surplus and sold. He wrote the following about the condition of the *Renard*, or Sac/Fox, nation:

the Interior of Louisiana, and the North-Eastern Provinces of New Spain. Performed in the Years 1805, 1806, 1807, by Order of the Government of the United States (London: Printed for Longman, et al, 1811).

¹⁵Ibid., 1-3.

¹⁶Ibid., 11.

¹⁷Ibid., 28.

They hunt on both sides of the Mississippi from the river Iowa, below *Prairie des Chiens*, to a river of that name above the said village. They raise a great quantity of corn, beans, and melons; the former of those articles in such abundance as to sell many hundred bushels per annum.¹⁸

Past explorers noted the great prospects for agriculture in the region, but only Pike saw crops being grown in surplus numbers. While it is impossible to pinpoint the precise moment when sedentary agriculture was first practiced on the wet-prairies, Pike's observations indicate that it had happened by the early nineteenth century.

Just a few years after Lieutenant Pike sailed back down the Mississippi, an Englishman named John Bradbury visited "Upper Louisiana," or what the American government defined as the Missouri Territory. His writing appeared in a publication called *Travels in the Interior of North America in the Years 1809, 1810, and 1811*.¹⁹ He gave the following description of the lands west of the Mississippi River:

The whole is one vast prairie of meadow, and, excepting on the alluvion [*sic*] of the rivers, and, in a few instances, on the sides of small hills, is entirely divested of trees and shrubs...But although the *general* surface corresponds almost exactly with the convexity of the earth, the agency of water has produced innumerable shallow valleys.²⁰

Bradbury notes the region's gentle topography, but his commentary on the "agency of water" and how it impacted the shallow valleys suggests a firm distinction between upland and lowland prairies.²¹

Like Pike, Bradbury's accounts do not reference any large prairie herbivores. He speculated that deer and elk populations were overexploited. When commenting on Indians laboring in lead mines near present-day Dubuque, Iowa, Bradbury posited that

¹⁸Ibid., 123.

¹⁹John Bradbury, *Travels in the Interior of America, in the Years 1809, 1810, and 1811; Including a Description of Upper Louisiana, Together with the States of Ohio, Kentucky, Indiana, and Tennessee, with the Illinois and Western Territories, and Containing Remarks and Observations Useful to Persons Emigrating to those Countries* (London: Sherwood, et al, 1817).

²⁰Ibid., 239-240.

²¹Ibid.

members of the Sac/Fox nation entered into that mode of subsistence because game on their land was “nearly destroyed.”²² Diminished buffalo and deer numbers left open a large ecological niche on the prairies and forced native people to adapt to new way of life.

Grass eating livestock eventually filled the void left by the buffalo’s absence. Because it required far less technology, grazing livestock was the region’s first variety of intensive agriculture. Near St. Louis Bradbury romanticized about the relative ease by which a farmer earned such a living:

Notwithstanding their want of industry, there is an appearance of comfort and independence in the villages, as, from the richness of soil, and fineness of the climate, the labours attendant on agriculture, and attention necessary to their cattle, and comparatively trivial...In a state of nature, these prairies are covered with a luxuriant growth of grass and herbaceous plants, affording a most abundant supply of food for the stock of the new settler; and it is worthy of notice, that any part of these prairies, when constantly fed on by cattle, becomes covered with white clover and the much esteemed blue grass, as frequent pasturing seems to give those plants a predominance over all others.²³

The scenes observed by Bradbury indicate that by 1810 the wet-prairies were in a state of transition. Hogs and cattle replaced buffalo as the principal consumers of prairie grass. Native people either vacated their lands or entered into lifestyles more like the European-Americans now in the process of encroaching on the land. Coal and lead mining operations, albeit primitive and non-mechanized, foreshadowed the industry that soon developed. By this time European settlers had moved into the wet prairie region, adapted to its environment, and their actions convinced (or sometimes forced) others to do the same.²⁴

²²Ibid., 255.

²³Ibid., 264, 308.

²⁴The American Midwest of the early 1800s was a place where many different cultures collided. Native American, French, English, and American influences all existed in the wet prairies during that time. In the 1991 book *The Middle Ground*, Richard White argues the result was a “middle ground,” or a place where

Between 1673 and 1817, the wet prairies were viewed almost exclusively by native people and explorers. Observations made continuously during that period describe abundant wildlife, really tall grass, patches of heavy timber, seasonal variation in water depths, limited river navigability, and human habitation. Many also commented on the fertile soil and speculated to the viability of cultivation and/or livestock grazing. Environmental changes were also observed. By the time of Bradbury's trek the buffalo were absent, livestock grazed in limited numbers, and some of the native peoples practiced settled agriculture. Human habitation remained constant, but the influx of new people and cultures into the region increased dramatically. By 1817 the wet prairies had started the transition from sparsely populated grassland to settled agricultural region.

Boosterism, Travelers, and Pioneers

Just as the wet-prairies were in a state of transition between open grassland and sedentary agriculture, Bradbury's *Travels in the Interior of North America* is an account that illuminates a shift away from mere observation and toward the promotion of settlement, or boosterism. The following passage indicates this change:

In an agricultural point of view, the vast tract of prairie extending through all these regions, is an important object of consideration. Amongst intelligent Americans, the question of whether it can or cannot be peopled by civilized man? [*sic*] has often been agitated...My own opinion is, that it can be cultivated; and that, in process of time, it will not only be peopled and cultivated, but that it will become one of the most beautiful countries in the world.²⁵

"worlds of [native people] and of various Europeans overlapped," and that action of mixing "created new systems of meaning and exchange" that were most often misunderstood by all people involved. That shared inability to properly understand one another gave rise to "new meanings and [*sic*] practices" unique to that moment in time. Richard White, *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region, 1650-1815* (Cambridge: Cambridge University Press, 1991), x.

²⁵Bradbury, *Travels in the Interior of America*, 266-268.

Bradbury's words indicate his participation in a contemporary debate about whether or not settlement in the wet prairies was possible for "civilized man."

The first white residents in Iowa settled themselves near the mouth of the Des Moines River, in the southeastern part of the state. The legal impetus of that migration was an 1824 land transaction between the United States government and the Sac/Fox Indians. Called the "Half Breed Tract," its stated purpose was to provide a home for American citizens with shared Indian heritage.²⁶ Speculation and settlement soon followed, along with more booster-like accounts of the state's land prospects.

Admitted into the Union as a territory in 1838, much of Iowa's initial white settlement was contained within the former "Half Breed Tract." Today that part of the state contains the counties of Lee and Des Moines, which are separated by the Skunk River. In 1840, over half of the territory's 43,000 citizens lived in its extreme southeastern corner (see Image 19).²⁷ The cities of Burlington, Fort Madison, and Keokuk, located in the state's extreme southeastern corner, established themselves as shipping points for the steady flow of steamboat traffic that traveled upriver from St. Louis.

²⁶The narrative of this thesis focuses on the region's environmental changes over time as they relate to the channelization of the Skunk River. Human habitation of the wet prairies and the relations between Americans and Native Americans is historically significant, but a full discussion of that topic lies beyond the scope of this project.

²⁷1840 United States Census, from "Historical Census Browser," Charlottesville: University of Virginia. Accessed January 10th, 2012. URL: www.mapserver.lib.virginia.edu.

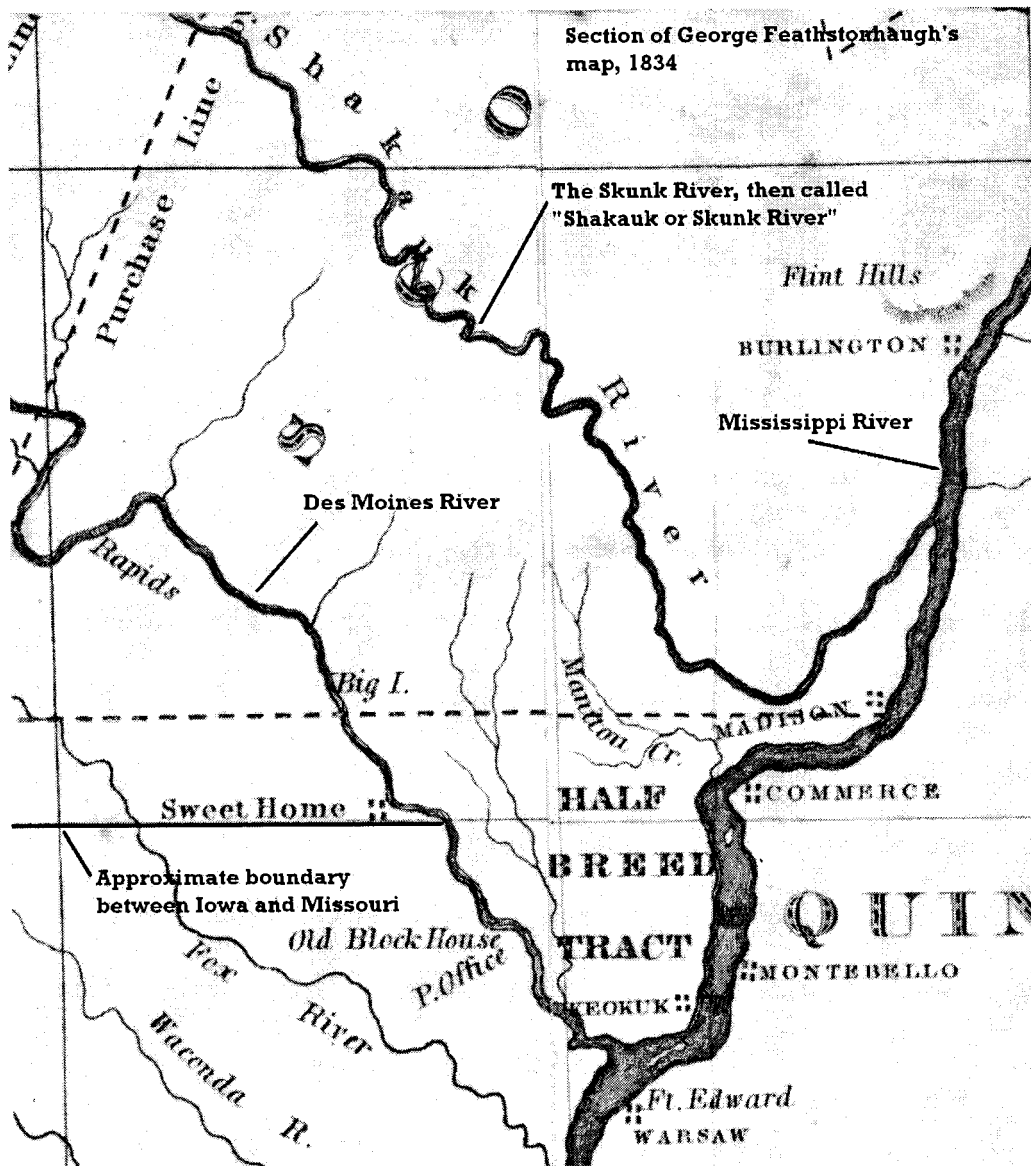


Image 19: "Section of George Featherstonhaugh's 1836 map of Iowa, showing the southeast portion of the state." First the "Half Breed Tract," and later the counties of Lee and Des Moines, this part of the state received a vast majority of the first American settlers.

George Featherstonhaugh, *A map of a portion of the Indian country lying east and west of the Mississippi River to the forty sixth degree of north latitude from personal observation made in the autumn of 1835 and recent authentic documents / constructed for the Topographical Bureau by G.W.F, U.S. Geolt.* Washington, D.C.: 1836, from Library of Congress Geography and Map Division, Washington, DC.

Two navigable waterways, the Des Moines and Iowa Rivers, permitted steamboat traffic into the territory's hinterlands. Between them, the smaller Skunk, or *Shecauqua* as it was also called, flowed into the Mississippi. While today the notion is utterly laughable, during that early period of white American settlement there was a belief that steamboat traffic on the Skunk was possible. In 1839, the *Western Christian Advocate* published an article naïvely claiming that steamboats of "light burden" could ascend upriver approximately two hundred miles.²⁸ The following year a Territorial Representative requested funds for a river survey, and seven years later the state's (admitted to the union as a state in 1846) General Assembly passed a law declaring the Skunk a navigable stream, at least in theory.²⁹

Shallow water and sand shoals hindered the smallest steamboats from sailing very far upstream from the river's mouth. The village of Augusta sat ten miles up the Skunk, and even that was too far for steamboats of light burden. A passenger traveling to Augusta on the sixty ton steamer *Maid of Iowa* recalled that the water "was so low the ferryboat could not reach the bank by several yards," and that many hours passed before a stagecoach arrived and carried them to their destination.³⁰ Trial and error eventually convinced people, legislators included, that the Skunk was indeed non-navigable.

During this time period the nature of human interaction with a river depended on whether or not it was navigable. Steamboat access, particularly before the introduction of railroads, generated commerce and encouraged outside investment. Rivers like the Des

²⁸ Allen M. Scott, "Iowa Territory," *Western Christian Advocate*, vol. 5, no. 39 (January 1839): 156.

²⁹ "Twenty-Sixth Congress- 1st Session," *Niles' National Register*, 1-25-1840; *Acts and Resolutions Passed at the First Session of the General Assembly of the State of Iowa* (Iowa City: A.H. Palmer, 1847), 57-58.

³⁰ "From Our Western Correspondent," *Christian Enquirer*, vol. 4, no. 15 (January 1850): 1; "Trade and Commerce in St. Louis," *Merchant's Magazine and Commercial Review*, vol. 15 (1846): 166-167.

Moines and Iowa were valued not only for the fertile soil around them, but also for their connectivity to other ports. Accordingly, human manipulation of those rivers focused on both the use of the water *and* the land around it. On the other hand, non-navigable rivers were valued not for their watercourse, but only for the natural resources located around the water. Timber, coal, fish, fowl, and fertile soil were all found in the bottomlands of small rivers. Those commodities were found near navigable rivers too, but the consideration of boat traffic shaped human interaction with them differently. The Skunk River still held value despite its lack of navigability, but the terms of that value were determined not by the river itself and rather by the riparian environment where it was located.

In 1840, Isaac Galland promoted settlement west of the Mississippi River by publishing a promotional pamphlet called *Galland's Iowa Emigrant*.³¹ Galland painted a happy image of an upright citizenry, fertile prairies, and vast stores of untapped mineral wealth. In terms of wildlife he noted that buffalo “continually recede before the white population,” and that native people had “hunted out” the deer. Prairie wolves, or coyotes, were “industriously destroyed” and only scarce numbers of small animals like the beaver, otter, and muskrat remained. He reported abundant numbers of rabbits, raccoons, squirrels, possums, and skunks.³² Galland’s note about the absence of buffalo and diminished deer populations corroborate observations made in earlier source material.³³

³¹Isaac Galland, *Galland's Iowa Emigrant: Containing a Map, and General Descriptions of the Iowa Territory* (Chillicothe: Wm. C. Jones, 1840; Iowa City: The State Historical Society of Iowa, 1949).

³²*Ibid.*, 19.

³³Booster accounts like *Galland's Iowa Immigrant* do not report accurate images of the state. Authors of booster accounts promoted the sale of land to potential settlers for their own profit and their writings are shrouded with self-interest. They skewed descriptions of the area by omitting negative features of the land, however, their observations came during a time when information about the state of Iowa was very limited. Motivations aside, booster accounts publicized landscape features in a way not previously done. If a booster’s intent is placed in a proper historical context, then information found in booster accounts can be very valuable to the historian and reader.

Galland also provides a valuable, early description of the Skunk River. Other sources have described environmental characteristics *similar* to the Skunk River, but Galland identified the river by name and noted specific information about it. The Skunk River, or *Shecaqua*, measured approximately one hundred-fifty yards in width, two hundred miles in length, and had timber “both abundant and of good quality” along both banks.³⁴ Galland failed to mention the swampy glades and muddy sloughs that came to characterize it only a few decades later. As a booster Galland wanted to sell land and make money, and mentioning unfavorable aspects of the landscape did not advance his agenda. The benefit of hindsight allows the historian and reader to view his omissions in a proper context.

Isaac Galland was not the only person boosting for settlement in the Iowa Territory. Around the same time, John Plumbe’s *Sketches of Iowa and Wisconsin* was published as a pamphlet that highlighted the lands purchased from the Sac/Fox Indians by the United States.³⁵ The transaction occurred after the Black Hawk War of the early 1830s and the tract was called the “Black Hawk Purchase.” This new section extended westward fifty miles from the Mississippi River and included the territorial capital, Iowa City, within its borders.³⁶ Coming only eight years after acquiring the “Half Breed Tract,” the “Black Hawk Purchase” was the second major land purchase from Indians in what became the state of Iowa.

³⁴Galland, *Galland's Iowa Emigrant*, 9.

³⁵John Plumbe, Jr., *Sketches of Iowa and Wisconsin, Embodying the Experience of a Residence of Three Years in those Territories* (St. Louis: Chambers, Harrism & Knapp, 1839; Iowa City: The State Historical Society of Iowa, 1948).

³⁶*The History of Jasper County Iowa*, 159.

Plumbe referred to the Skunk River by its American and Indian names, the Skunk and *Chacagua*, respectively.³⁷ Aside from echoing Galland's sentiments regarding abundant sources of fresh water and a lack of wild game, Plumbe included the following description of the Skunk and an opinion on its navigability:

The next [river] is the Skunk, which is smaller, and rather given to sudden rises, yet a very pretty river, and may be navigated by keel boats at least, at all seasons. What are called keel boats in the West, are something similar to Durham boats, they are built with flat bottoms, and decked over like a canal boat; they are generally set up the river with poles, but have sails to use in case of fair wind.³⁸

The "sudden rises" indicated by Plumbe align with Carver's distinction between uplands and lowlands and Bradbury's reference to the "agency of water" in the wet prairies.³⁹ Also Plumbe's comment on navigability only by keel boat suggests he did not value the river as a commercial shipping route.

Four years after Galland and Plumbe published their booster publications, J.B. Newhall produced another titled *A Glimpse of Iowa in 1846*, which promoted the new state's potential for agriculture and industry.⁴⁰ Newhall moved to Iowa in 1832, right after the "Black Hawk Purchase," and settled near the Mississippi River city of Burlington. Before his death in 1849, Newhall wrote several books that promoted settlement west of the Mississippi River. At one point he went on a lecture tour, giving talks to prospective immigrants in places as far away as England.⁴¹

³⁷Plumbe, *Sketches of Iowa and Wisconsin*, reference to Chacagua on page 14; reference to Skunk on page 36.

³⁸*Ibid.*, 36.

³⁹Plumbe, *Sketches of Iowa and Wisconsin*, 36; Carver, *Travels Through the Interior Parts of North America*, 35; Bradbury, *Travels in the Interior of America*, 239-240.

⁴⁰J.B. Newhall, *A Glimpse of Iowa in 1846; or, the Emigrant's Guide, and State Directory; with a Description of the New Purchase: Embracing Much Practical Advice and Useful Information to Intending Emigrants*, 2nd ed. (Burlington: W.D. Skillman, 1846; Iowa City: The State Historical Society of Iowa, 1957).

⁴¹W.D. Skillman, "Introduction to *A Glimpse of Iowa in 1846*," in *A Glimpse of Iowa in 1846*.

In 1846 Iowa became a state and inland settlement had reached Jasper County. The county was included in part of the "New Purchase," which after the Black Hawk Purchase, was the third major tract of land acquired from the Sac/Fox Indians. Newhall described the counties of the New Purchase:

They are generally salubrious, dry and elevated, affording abundant range for pasturage; equally susceptible of producing all the various grains and fruit that yield so abundantly elsewhere. Thus, another wide and unoccupied field is laid open to the advancing tide of emigration that is annually spreading over our fertile prairies.⁴²

There is no mention of the riverbottoms or the seasonal overflows that made traveling overland substantially difficult.

Newhall placed special emphasis on the profitability of raising sheep. When recommending what products a newcomer could raise he said, "It is by no means *merely* the field of Indian corn, or even wheat, that will constitute all the sources of wealth to the Iowa farmer."⁴³ Unlike grazing livestock, growing crops required a full compliment of expensive machines and a storage place for the harvest. A family of settlers moving to Iowa in 1846 would have seen much more prairie grass than land under cultivation. The prairies of the New Purchase were still in the early stages of transition from unimproved grassland to agriculture and raising livestock was a less expensive way to work the land.

⁴²Newhall, *A Glimpse of Iowa in 1846*, 50.

⁴³*Ibid.*, 51.

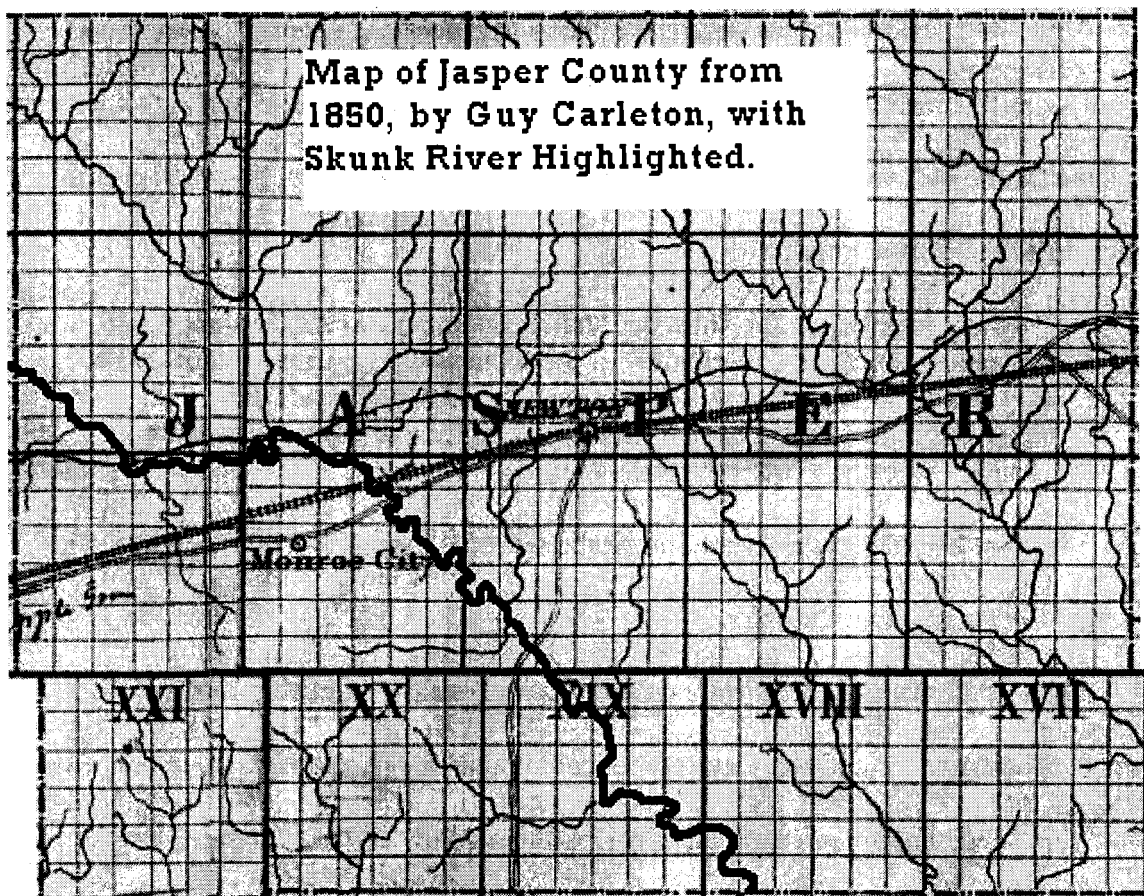


Image 20: "Section of Guy Carleton's map of Iowa, showing Jasper County, 1850," with South Skunk River highlighted.

Guy Carleton, *Sectional Map of the State of Iowa*, Dubuque, 1850. From Library of Congress Geography and Map Division, Washington, DC.

The first booster publication to include a specific section for Jasper County was written by Nathan Parker in 1856. Titled *Iowa as it is in 1856*, the book focused on the state's industrial potential and the viability of water-powered mills on inland streams. Notable in Jasper County was the abundance of coal, limestone, and the prediction that it would become "quite a point for manufacturing."⁴⁴

⁴⁴Nathan Howe Parker, *Iowa as it is in 1856*, 32 and 149-150.

Parker lauded the abundance of water found throughout the country, but omitted any negative sketches. When commenting on the height of prairie grass, he contrasted the uplands and lowlands:

The prairie-grass never attains its highest growth in the richest soil; but in low, wet or marshy land...the centre of the main stem of the grass- that which bears the seed- shoots up to a height of eight and ten feet, throwing out long, coarse leaves or blades. But on the rich, undulating prairies, the grass is finer, with less of a stalk and a greater profusion of leaves.⁴⁵

Parker notes that grass grows taller in the bottoms, but he excludes all other riparian features. He also explains that upland soil is “the richest,” leaving it up to the reader to infer that earth in the fens was inferior.

If and when boosters highlighted the bottom lands they mentioned abundant wild vegetation and its potential for grazing livestock. Accordingly, a reader learned that in the summer one found the lowlands full of strawberries, gooseberries, plums, raspberries, grapes and crab apples. Honeybees, too, thrived in the glades. Through the cold months wild potatoes, beans, and “various bulbous roots” imparted sustenance to settler and livestock alike. And the one sure way to glean a profit from bottomland was by cutting, stacking, and selling the dense grasses that grew naturally there.⁴⁶

Between the publishing of Newhall’s and Parker’s booster books the construction of railroads significantly increased. In 1856 the bridge at Davenport, over a mile long and the first to span the Mississippi between Illinois and Iowa, was under construction. Tracks were laid fifty-five miles west of Davenport to Iowa City, and surveyed as far as Des Moines. One seeking passage to Newton from the end of the line at Iowa City got off the

⁴⁵Ibid., 27.

⁴⁶Ibid., 196.

train and embarked on a ninety mile stagecoach ride.⁴⁷ At that time the state's hinterlands were still somewhat remote and largely unconnected to the outside world.

Settlers entered Jasper County for the first time in the spring of 1843. Indian title to the New Purchase ended on the first of May that year, and many people looked forward to staking a claim. They entered the county via the Skunk River, but not by watercraft. Four men hiked upriver eighty miles, staying in the fringes of timber that covered the bottoms. They entered the county from the south, most likely in the same location where the Lana dredge boat left it almost seventy-five years later.⁴⁸ The men had come from Jefferson County seeking first pick of the new land, and one of them, Adam Tool, was remembered by later generations as Jasper County's patriarchal pioneer.⁴⁹

The first claims staked out in the county did not include riverbottom land, but hiking eighty miles through that swampy morass ensured a choice selection. Many still questioned whether a farm comprised entirely of prairie was a wise investment, and as a result the first claims made in the county were "composed of about equal parts of timber and prairie."⁵⁰ In terms of value and demand, land in the bottoms ranked lowest and often times did not sell.

In 1850 Jasper County reported 1,280 residents and 150 farms. Except for a few of sawmills and grist mills near the Skunk, there was almost no industry. Like most of the Iowa hinterlands, the county's prairie and riparian environments were largely devoid of people and remained in their pre-cultivated state.⁵¹ Only after the more desirable uplands

⁴⁷Ibid., 95-100.

⁴⁸*The History of Jasper County Iowa*, 307-308.

⁴⁹Ibid.

⁵⁰Ibid.

⁵¹1850 United States Census, from "Historical Census Browser," Charlottesville: University of Virginia. Accessed January 10th, 2012. URL: www.mapserver.lib.virginia.edu.

were put under cultivation were efforts made to improve the lowlands. Improvement of the uplands before the lowlands helps explain why drainage efforts did not emerge until much later, as there simply was no demand for them.

The lasting impact of boosters is that, for better or for worse, they attracted people to the prairies. Not surprisingly, once there, it did not take long before negative images of the landscape made their way into print. For example, in 1861, the *Saturday Evening Post* published a story about traveling by stagecoach through central Iowa. The stage route crossed the Skunk River in Jasper County and connected Iowa City with Des Moines, and then went to places much further west like Pike's Peak in Colorado, Mormon settlements in Utah, as well as California and Oregon. With railroads not yet reaching the state's hinterlands, anyone seeking passage had to travel by stagecoach on a rudimentary, yet well traveled road. Because no bridges existed either, the stages forded rivers at specified points along the route.

One such ford was located about five miles west of Newton. Taking place in the wet summer months, the *Post* article describes an overflowed Skunk that covered the bottoms for over a width of two miles. The road was jammed with people, animals, and wagons waiting to cross. Some sat on the banks and waited patiently for the recession of the floodwater, others trudged across. In 1861, a correspondent for *The Saturday Evening Post*, J. Ross Browne, wrote the following of his experience:

I arrived at the river about 11 o'clock in the forenoon, and it was sundown before I got across. I waited, and waited in vain, for some conveyance to carry me over, and at last, finding that night was fast approaching, I took off my coat and put it in my carpet sack, and 'pitched in.' Such a time is better imagined than described. The high grass, which grows from six to eight feet high, was hard to get through, the road being so full of oxen and ox drivers that I was compelled to make a road of my own. It was a little

comfort to know that I was not the only one who was 'taking it afoot,' as all the men belonging to the train waded after the wagons.

About midway there was a deep slough, and such pulling, and such hollowing, and such swearing, as it took to get the teams through, beats 'J. Ross Browne's adventures in Washo.' I took it easy, managing to keep up with the main body of the train.

We met the stage about the deepest water, and to add to my ill luck, it contained a couple of ladies of my acquaintance from Des Moines. They greeted me with 'How do you do, Mr. B.? Taking it afoot are you?' 'Yes,' said I. 'You look rather tough- must had a little to drink,' &c. I said nothing more, thinking to myself that had they waded as far as I had, they would look 'a little tough,' too.

The stage was soon out of sight, and I was glad of it. The other side once reached, it was not long until I was in Newton. As I took a last look at the river from the high bluff scene in the distance (see Image 21) I wished for once to be back in the eastern states.

It is a great sight to visit Skunk River during high water. I need not say so, however, as many hundreds now in the east have seen it in years past. It is a very common thing for folks living in these parts. But when our men from the east come to look at the beautiful prairies, traveling in the stage, you hear some murmuring, 'How deep it is!' 'Do you cross in this?' 'Will it leak?' 'Is there no boat in the neighborhood?' &c., &c. There is no other way to go, and such scenes as I have illustrated occur every day.⁵²

Browne's uncomfortable experience as a traveler helps explain why negative feelings about the Skunk developed. To the stage passenger, crossing an overflowed Skunk River was certainly an inconvenience, but it was also isolated to a single instance. Once on the other side the flooded bottoms faded away behind them and perhaps were never seen again. Those who settled in Jasper County and tried to farm the bottom land experienced the

⁵²J. Ross Browne, "Government Train and the Western Stage Company's Coach Crossing Skunk River, During the Flood," *Saturday Evening Post* (December 21, 1861): 4.

intermittent overflow of the Skunk on a regular basis. Permanent settlers are the real agents of change in this story.

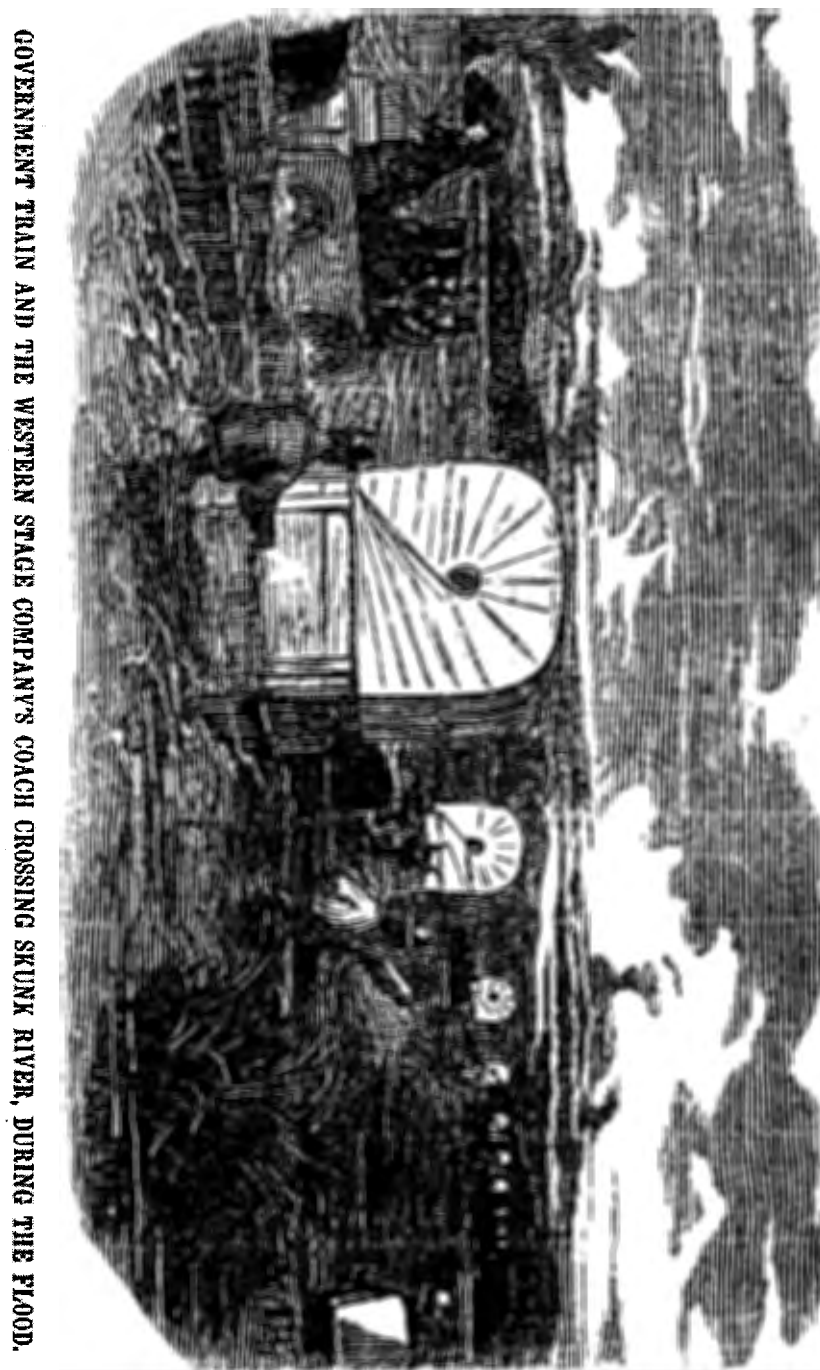


Image 21: "Image of wagon train fording the overflowed Skunk River in Jasper County, 1861."

"Government Train and the Western Stage Company's Coach Crossing Skunk River, During the Flood," *Saturday Evening Post* (December 21, 1861): 4.

Settlement and Transition to Agriculture

In 1860 the central Iowa environment had not yet been transformed into an agricultural landscape. Improved farmland amounted to about twelve percent of the county's total acreage.⁵³ Wild grasses covered the uplands and groves of timber grew in the bottoms. The buffalo herds were gone, but a seventeen year absence of the Sac/Fox Indians allowed for the recovery of deer and elk populations.⁵⁴ During that decade the first railroad tracks made their way into the county, which increased the speed of settlement and environmental change perhaps more than any other factor.

Oddly enough, efforts to improve navigation of the Des Moines River fostered growth of the railroads. Railroads linked places with non-navigable rivers to centers of commerce. Small inland rivers like the Skunk were simply inaccessible to any watercraft larger than a canoe. Around the same time that the State Assembly declared the Skunk a navigable waterway, the federal land office passed possession of unsold land near the Des Moines River to the Des Moines River Improvement Company. In 1858, the state transferred over 250,000 acres to the newly formed Des Moines Navigation & Railroad Company. The tracks laid by that company were the first to reach Jasper County and the state's interior.⁵⁵

The brief existence of a Skunk River ferry service is mentioned during July of 1881. Terrible floods that summer washed out the majority of bridges in the county, and a few enterprising locals organized water transportation between Newton and the coal mines near Colfax. With the ferry operators earning between twelve and fifteen dollars per day, the

⁵³Out of 466,910 acres in the county, 58,772 acres were improved. 1860 United States Census, from "Historical Census Browser," Charlottesville: University of Virginia. Accessed January 10th, 2012. URL: www.mapserver.lib.virginia.edu.

⁵⁴ *The History of Jasper County Iowa*, 433.

⁵⁵ *Ibid.*, 206-210.

Newton Journal declared the venture a “financial success.”⁵⁶ Although ferrying proved lucrative during brief moments of incredibly high water, the business was not viable in normal conditions. Furthermore, wooden bridges destroyed by floods were soon replaced with crossings made of stronger materials such as iron, making washouts very rare occurrences after the turn of the century.

Just as livestock replaced the buffalo, row crops soon replaced prairie grass. Statistics from the 1870 agriculture census show that year as the first time when farms in Jasper County averaged more improved land than unimproved. In other words, all the easily accessible upland was put under cultivation during the 1860s, and by the end of the 1870s nearly every available hillside and meadow was plowed under and supported crops instead of prairie grass. By the turn of the century only the wooded, wet bottomlands remained unimproved. Their productive potential was known, but intermittent overflows hindered any development efforts.

With the prairie sufficiently “tamed” by 1880, the Skunk River bottoms became the last vestige of wild prairie in Jasper County. The habitat was still ideal for waterfowl, of which ducks and geese were popular targets. Many hunting parties went “goosing” in the bottoms for several days at a time.⁵⁷ Predatory animals like coyotes and wolves still inhabited the area, but were feared for the damage they did to livestock and not for any threat they posed toward human life. The rapid settlement and exponential increase in cultivated land during the 1870s and 1880s brought many more people in close contact with the river.

⁵⁶*Newton (IA) Journal*, “County News,” July 12, 1881.

⁵⁷*Jasper (IA) Free Press*, “Locals: Geesing,” March 15, 1860.

Table 8: Census Data for Jasper County, Iowa: Population, Total Farms, and Improved Acres⁵⁸

Census Year	County Population	Total Farms	Avg. Farm Size, in Acres	Avg. Improved Acres per Farm	Avg. Unimproved Acres per Farm	% of all County Land in Farms	% of all County Land in Farms, Unimproved
1850	1,280	150	203	41	162	7	5
1860	9,883	940	173	63	110	35	22
1870	22,619	2,315	133	86	47	66	24
1880	25,963	3,220	134	122	12	93	8
1890	24,943	2,994	145	131	14	93	9
1900	26,976	3,320	140	128	12	99	8
1910	27,034	3,272	138	125	13	97	9
1920	27,855	2,946	149	131	18	94	11
2010	36,842	1,166	367			92	

By 1890, the county population of about 25,000 people had remained steady for nearly twenty years. Growth of industry in Newton and Des Moines kept a steady stream of people flowing through the county, and some took note of the Skunk's recreational value. By then, many considered the Classic Skunk a place to relax and get away from the hustle and bustle of city life.

One Newton resident, Emerson Hough, conveyed his love of fishing the waters of the Skunk in articles he wrote for the Chicago-based *Forest and Stream* magazine. In eighteen years, between 1883 and 1901, Hough produced fourteen articles for *Forest and Stream* that mentioned fishing conditions in the Skunk River near Newton. His articles provide valuable insight into late nineteenth century anglers' attitudes and fishing techniques. Hough depicts the river as overfished, and his words carry a nostalgic tone for bygone days when the bottoms abounded with fish and fowl. Hough believed that nothing

⁵⁸ The 2010 data for total farms, average farm size, and percentage of all county land in farms comes from the 2007 agricultural census, which was the most recent data available in May 2012, from "Jasper County QuickFacts from the US Census Bureau." Accessed on May 10th, 2012. URL: www.census.gov; United States Census, 1850-1920, from "Historical Census Browser," Charlottesville: University of Virginia. Accessed January 10th, 2012. URL: www.mapserver.lib.virginia.edu.

short of a “war of extermination” was being waged in the wet prairies by over-zealous anglers and hunters.⁵⁹

Hough described the Skunk as “muddy, lined with timber, and full of snags.”⁶⁰ As a child he recalled catching several species of fish that eluded him as an adult. Places where black bass, pike, perch, and muskellunge “once played unrestrained,” became devoid of fish as a result of fishing techniques such as the use of seining nets and dynamite. He recalled a particularly arid year when the river’s course dried up into “a series of pools,” and in them had collected large quantities of bullheads and catfish. Coal miners working near the river saw the easy prey and proceeded to throw dynamite in all the pools, gathering “many tons” of fish in the process. Hough believed the river’s fish population never fully recovered from that instance.⁶¹

Aside from the human element, Hough talked about the role that weather played in the availability of birds and fish. Dry years meant poor prospects, but exceedingly wet years created more habitats for both fish and fowl. The flooded bottomlands that frustrated travelers like J. Ross Browne attracted hundreds of thousands of prairie chickens, ducks, geese, and other migratory birds. During floods the newspapers often reported high numbers of birds in the area and encouraged the local “crack shots” to go out and reap their bounties.⁶²

Quantity-based fishing techniques were not always criticized. Only when fishing transitioned from a method of subsisting to a leisure activity did seining and dynamiting fall out of favor. For much of the nineteenth century, seining was a tried and true method

⁵⁹Emerson Hough, “Iowa Notes,” *Forest and Stream* (March 15, 1883): 128.

⁶⁰*Ibid.*

⁶¹*Ibid.*; Emerson Hough, “The Forest and Stream Sarsparilla,” *Forest and Stream* (May 15, 1897): 390.

⁶²*Colfax (IA) Clipper*, “Happenings of Thirty-Two Years Ago- March 1882,” May 5, 1914.

for gathering large numbers of fish. Several decades prior to Hough's disapproving remarks, an 1857 issue of the *Genessee Farmer* featured an article that lauded its practice on the Skunk River. The article described the seining process in detail:

The men lost no time, but immediately commenced cutting off large branches from the trees and brush which skirt the creek, tying [*sic*] and twisting them together, until they had secured enough for a cable long enough to reach from shore to shore, and about four feet in diameter. Then some fifteen or twenty of them plunged into the stream, dragging their branch rope entirely across, and some distance down the creek; then lowering it down to the bottom, all commenced pushing up again, until they got near a desirable place to land the fish, when those on the opposite shore pushed inward, till they reached the side with the others. Thus the fish were fairly pushed on shore, though some got caught in the branches and were taken out by hand.⁶³

Hough viewed seining as unsporting and wasteful, but practitioners of the method viewed it as the most efficient means to secure a good catch. Opposition to seining and dynamiting led to tighter regulation of Iowa's fishing laws. By the turn of the century Hough's opinion had spread, as both practices were illegal and their use resulted in heavy fines.

The species of fish found in a river indicate certain characteristics about that particular riparian environment. For example, trout flourish in clear, fast moving water while catfish prefer turbid water and muddy riverbeds. Water speed, temperature, tree-cover, and available nutrients all determine the kinds of fish that can live in a river. A decline in numbers of one fish species in favor of another can offer clues about habitat changes over time.⁶⁴

Emerson Hough's early recollections of the Skunk include the presence of muskellunge (muskie), bass, pike, and perch. Many of the articles describe a vivid

⁶³“Ladies Department: Western Amusements,” *The Genessee Farmer*, vol. 18, no. 8 (July 1857): 225.

⁶⁴“Fishes of Iowa,” from the Iowa Department of Natural Resources webpage. Accessed on 2-25-2012. URL: www.iowadnr.gov/Fishing/IowaFishSpecies.aspx.

childhood memory of Hough's father catching a twenty-five pound muskellunge.⁶⁵

Hough's fishing preferences mirror the species of popular sport fish that are today found in the lakes of northern Minnesota and not in turbid Iowa streams. Aside from depletion at the hands of seining nets and dynamite, the disappearance of these popular sport fish suggests that the river's environmental conditions no longer provided them with an optimum habitat.

Muskie and bass thrive best in clear water with lots of vegetation. Both fish consume large amounts of insects, crawdads, and smaller fish that prefer the same sort of habitat. In terms of reproduction, muskie prefer shallow, marshy areas and bass prefer gravel beds in slow moving water. The disappearance of these fish, along with others like the pickerel (pike), and even the trout indicates that they could no longer live, reproduce, and feed in the Skunk River.⁶⁶ In 1892 a federal Fish Commission agent named Seth Eugene Meek documented the condition of the Skunk River and explained the transition it had gone through:

The prairie was originally covered with a dense growth of prairie grass and herbaceous plants, which tended to produce a stiff sod. During heavy rains this sod absorbed the water, preventing its direct flow into the rivers, and it reached the latter chiefly by slowly filtering through the soil. The streams were thus relieved from overflow, and were kept from drying up during the summers. I have been informed that many streams, formerly deep and narrow, and abounding in pickerel, bass, and catfishes, have grown wide and shallow, while the volume of water in them varies greatly in the different seasons, and they are now inhabited only by bullheads, suckers, and a few minnows. The breaking of the native soil for agricultural purposes has especially affected the smaller streams in this respect, while the construction of ditches and the practice of underdraining have had their effects on the larger ones. Moreover the constant loosening

⁶⁵Emerson Hough, "Chicago and the West," *Forest and Stream* (September 28, 1901): 252.

⁶⁶"Fishes of Iowa," from the Iowa Department of Natural Resources webpage. Accessed on 2-25-2012. URL: www.iowadnr.gov/Fishing/IowaFishSpecies.aspx.

of the soil, in farming, tends to reduce it to that condition in which it is readily transported by the heavy rains to produce muddy currents.⁶⁷

Meek's remarks offer a glimpse into the environmental transformation inherent in turning a wet-prairie into an agricultural region.

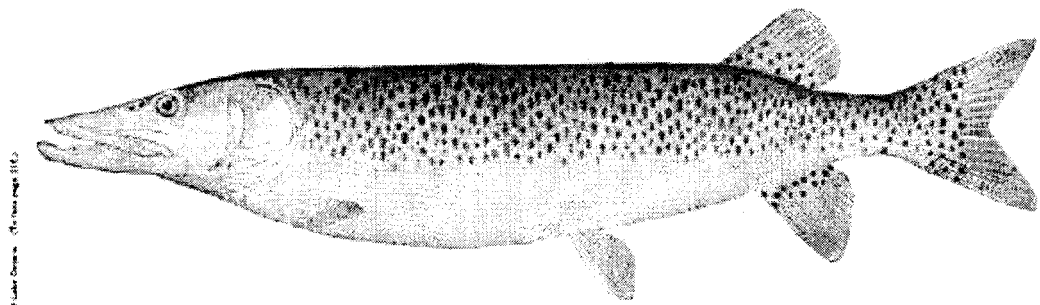
Grasslands held excess water like a sponge and kept soil sediment in place by the constant groundcover it provided. With the prairie grass removed and the soil exposed to the elements with regularity, much more dirt found its way into riparian zones. The lighter, finer dirt particles dissolved into the water, giving it a muddy, turbid appearance. Heavier sand particles settled on the riverbed, which filled in holes and caused river channels to widen instead of deepen. The result was a transition away from environmental factors that favored bass and muskie, and toward fish that thrive in shallow, turbid, and sandy rivers.

According to the Iowa Department of Natural Resources the catfish is one of the state's most popular gamefish. While the catfish has been a staple in Iowa rivers since before the application of intensive agriculture, it was well suited to the environmental changes that happened as a result. Described as "omnivorous and opportunistic" feeders, catfish eat a wide variety of living and dead material. Unlike the feeding habits of bass and muskie, the catfish relies less on sight and more on touch and taste.⁶⁸ As a result the catfish was less affected by increased water turbidity and continued to thrive in small inland rivers like the Skunk. In the twenty-first century channelized sections of the Skunk River are well-known by anglers as "prime catfish water."⁶⁹

⁶⁷Seth Eugene Meek, "A Report Upon the Fishes of Iowa, Based Upon Observations and Collections Made During 1889, 1890, and 1891," *Bulletin of the United States Fish Commission* (Washington, D.C.: United States Fish Commission, 1892), 218.

⁶⁸"Fishes of Iowa," from the Iowa Department of Natural Resources webpage. Accessed on 2-25-2012. URL: www.iowadnr.gov/Fishing/IowaFishSpecies.aspx.

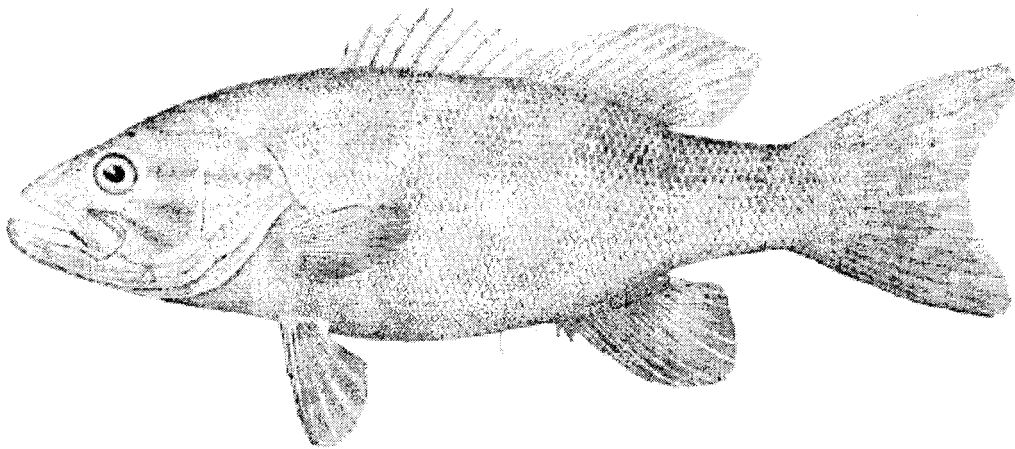
⁶⁹Jim Billig, ed., *Sportsman's Connection: Iowa Fishing Map Guide* (Superior, Wisconsin: Sportsman's Connection, 2011), 232.



ESOX NIGER (L.) Thomsen. Muskies.

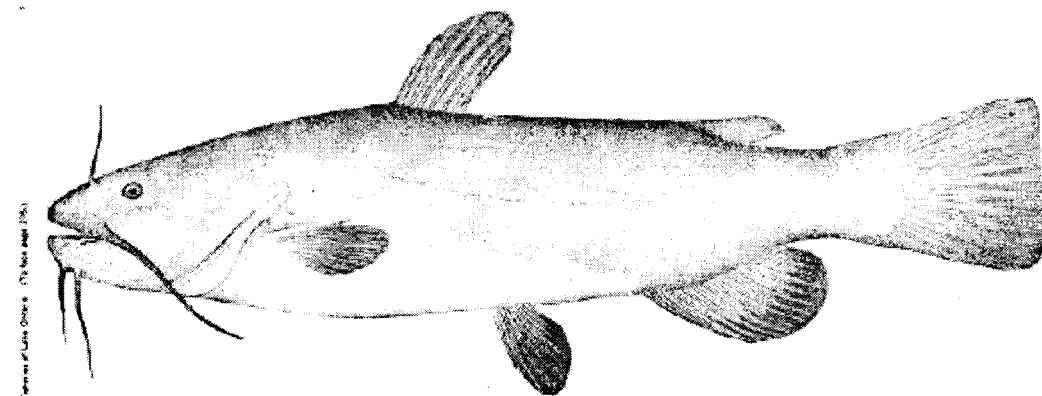
1892. Fisheries of Lake Ontario. (To face page 114.)

PLATE XLV.



MICROPTERUS DOLOMIEU Leisler. Smallmouth Bass.

P. C. 1892. Fisheries of Lake Ontario. (To face page 115.)



1892. Fisheries of Lake Ontario. (To face page 116.)

Images 22-24: The muskie (top) and smallmouth bass (middle) were common gamefish found in the Skunk River prior to the introduction of intensive agriculture and channelization. The bullhead catfish (bottom) was also commonly found in the river then, but changes in the riparian environment favored the catfish and not the other two. The Skunk River is known as an ideal place to catch catfish in 2012. Images from *Bulletin of the United States Fish Commission* (Washington, D.C.: United States Fish Commission, 1892), Plates XXII, XLI, and XLV.

Between 1881 and 1916 the local newspapers sometimes mentioned when a group of local citizens visited the Skunk River on a fishing trip. While most of these excursions went undocumented, the more successful outings included specific information about the size and type of fishes that were caught. The following table is a list of newspaper references made about fish caught in the Skunk River or one of its tributaries in the vicinity of Newton:

Table 9: Instances of Fish Reported in Jasper County Newspapers⁷⁰

Year	Date	Observation
1881	5-19	8 lb. catfish
1886	7-14	\$250 fine for catching 50 catfish with seine net
1906	7-19	Pickrel (pike)
1908	5-29	bullfishes (bullhead catfish)
1908	8-6	18 lb. alligator gar
1908	10-12	16 lb. & 5 lb. channel catfishes
1909	6-7	17 lb. catfish
1909	6-11	17 channel catfish caught, 20 lbs. total weight
1910	6-21	22.5 lb fish (species not named)
1911	9-30	pike, "first taken in many a day"
1912	6-14	12 lb. carp
1913	8-5	"several nice fish"
1913	8-9	"fine string of fish"
1913	10-22	11 lb. carp
1914	7-2	9.5 lb. catfish
1914	8-3	11 lb. catfish
1914	8-5	35 catfish, ranging between 1 and 3 lbs.
1914	8-10	25 lb. yellow catfish, 40 inches long
1916	7-5	35 lb shovelhead catfish, 42 inches long

⁷⁰*Newton (IA) Journal*, "County News," May 19, 1881; *Newton (IA) Journal*, "Ho, You Seine Fisherman," July 14, 1886; *Newton (IA) Daily News*, "Big Catch Expected," July 19, 1906; *Newton (IA) Daily News*, "Bottom Land A Pond: Skunk River Is Booming, Raised For Inches In Twelve Hours," May 29, 1908; *Newton (IA) Daily News*, "A Fish Story," August 6, 1908; *Newton (IA) Daily News*, "Channel Cat Fish," December 12, 1908; *Newton (IA) Daily News*, untitled column on front page, June 7, 1909; *Newton (IA) Daily News*, "Caught Seventeen Fish," June 11, 1909; *Newton (IA) Daily News*, "The First Fish Story of Season Now Circulates," June 21, 1910; *Newton (IA) Daily News*, "Harry Agnew Extracts Pike From the River," September 30, 1911; *Newton (IA) Daily News*, "Enjoy Few Days Fishing at the River," June 14, 1912; *Newton (IA) Daily News*, "Fishing Party at River Sunday," August 5, 1913; *Newton (IA) Daily News*, "Camping Trip," August 9, 1913; *Newton (IA) Journal*, "Had Good Time Camping At The River," October 22, 1913; *Newton (IA) Journal*, "Caught A Cat Fish Worth Having From River," July 2, 1914; *Newton (IA) Journal*, "Some Fight With 11 Lb Cat Fish," August 3, 1914; *Newton (IA) Daily News*, "Splendid Lot Of Fish Were Caught With Hook And Line," August 5, 1914; *Newton (IA) Daily News*, "The Reasnor News: Takes A 25-Lb. Catfish Out Of Skunk River," August 10, 1914; *Newton (IA) Journal*, "Some Fish That Was Caught In Indian Creek," July 5, 1916.

The table indicates two things. Most reported trips happened during the summer, and the most common fish pulled from the river was some species of catfish. This table is by no means conclusive proof of the species of fish that lived in the river between 1881 and 1916, but the overwhelming mention of catfish suggests that anglers were aware of the fish's abundant numbers, planned their fishing strategies to catch them, and believed a good outing was worthy of mention in the newspaper.

Recreation on the river was not limited to hunting waterfowl or fishing. During the early part of the 1900s a "clubhouse movement," attracted many people to the bottoms for rest and relaxation as well. A few landowners along the river built small "clubhouses" near the water and hosted elaborate parties, some of which lasted several days. While specific furnishings within the clubhouses are lost to history, the activities people did when using them offer clues about the type of recreation they were used for.

In 1907, there were nine clubhouses in operation, one of which was described as "screened throughout" and as "modern as it can be."⁷¹ Screening was essential to keep out the plagues of mosquitoes that inhabited the marshes. Serving hot meals required a cooking stove, and lengthy stays implied that the buildings were furnished with beds. Based on remote locations and seasonal usage, it is unlikely that indoor plumbing or electric lighting were installed in any of the clubhouses. Winter use was never mentioned in the newspapers, which suggests the structures lacked insulation and heating.

At a 1906 Fourth of July celebration, twelve people enjoyed two meals, boating, and set off firecrackers on the riverbank. Some events lasted an afternoon, others a few days, and still others lasted for upwards of two weeks. Since boats required storage some of the clubhouses likely featured an outbuilding for that purpose. Group sizes ranged from

⁷¹*Newton (IA) Daily News*, "Merry Mad Caps to the River," June 14, 1913.

two to thirty, and large events may have necessitated the use of tents for those staying overnight. The clubhouse grounds were maintained to a level that permitted guests to relax outdoors and walk right up to the river. In other words, the buildings and grounds presented a welcoming appearance to guests and were not overgrown with weeds. To combat flooding, it is also possible that the buildings themselves were on stilts and elevated off the ground.⁷²

Clubhouse ownership spanned a wide social spectrum. Wealthy business families from Newton like Alvin and Jennie Gates used theirs for social gatherings and fishing trips. Alvin, or A.C. as he was known, helped found the George W. Parsons Co. (which later became the Maytag Co.), and was a prominent member of the local Masonic Lodge. Jennie Gates was a member of a local women's club called the P.E.O., and hosted her own parties at the clubhouse.⁷³

Burr Westbrook, owner of a local grocery store, hosted fishing and hunting parties at his clubhouse. During the summer of 1907, the nine clubhouses operating near the river were being broken into by local teenagers. Westbrook set up a sting operation and caught two young men who were later charged in juvenile court for the break-in. After a successful fishing trip in 1909, Westbrook displayed a seventeen pound catfish caught there in his grocery store icebox. Later he sold his clubhouse to a local social group called the Tripe Club, whose members used it for social gatherings.⁷⁴

The Newton Hunting & Fishing Club (NHFC) owned a clubhouse used by its members for hunting and fishing. Although unsuccessful in stopping the dredge from

⁷²*Newton (IA) Daily News*, "Club House Broken Into," May 29, 1907; *Newton (IA) Journal*, "Camping Party Home From River," August 16, 1913; *Newton (IA) Daily News*, "Club House Party," July 6, 1906; *Newton (IA) Daily News*, "Whilst Club Picnic," October 21, 1908.

⁷³Weaver, ed., *Past and Present of Jasper County*, 508-510.

⁷⁴*Newton (IA) Daily News*, "Club House Broken Into," May 29, 1907; *Newton (IA) Daily News*, June 7, 1909.

chewing through their land, the NHFC was the only organization publicly opposed to the straightening of the Skunk River. During the summer of 1909, the club had a small dam constructed on the river, presumably to make a pool for fishing. Plans to expand the clubhouse were halted by the dredge project, and after a failed plea to the County Supervisors the NHFC sold their clubhouse property.⁷⁵

Urban business owners and social clubs were not the only clubhouse affiliates. Thomas Healy, a prominent farmer and supporter of the Skunk River Ditch, also operated a clubhouse on his property. In the fall of 1909, Healy hosted a training camp for twenty-five players and coaches of the Des Moines College football team.⁷⁶ During a major overflow in the spring of 1908, Tom Healy's son, Jack, and some of his friends rigged up a sailboat and "took a long fine ride over the big pond" that covered their bottomland property."⁷⁷

Aside from sporadic ferrying and sailing trips during times of flood, the only other references made to boating on the Skunk came from accounts of personal recreation. Take the case of a Colfax man named Will Weston. In 1909 he constructed a peculiar vessel intended for hunting and fishing expeditions on the river. Christened the *Colfax*, Weston's boat measured twenty-six feet long, six feet wide, had a flat bottom, and displaced only four inches of water. A six horsepower gasoline engine powered the *Colfax*, and it was propelled by two small paddlewheels mounted on the stern. Indicative of the boat's purpose as a recreational craft, it included a stove, refrigerator, electric lights, linoleum

⁷⁵*Newton (IA) Daily News*, "Visited the New Dam," September 18, 1909; *Newton (IA) Daily News*, "New Skunk River Causes Club Much Grief," February 14, 1911; *Newton (IA) Daily News*, "Buys Land From Newton Hunting and Fishing Club," October 4, 1912.

⁷⁶*Newton (IA) Daily News*, "Camping at Tom Healy's: Foot Ball Squad of Des Moines College Begin Training," September 7, 1909.

⁷⁷*Newton (IA) Daily News*, "Bottom Land A Pond: Skunk River Is Booming, Raised Four Inches In Twelve Hours," May 29, 1908.

flooring, canvass seat cushions, and ample storage space for gear. The craft cost approximately \$375 dollars and two months time to construct.⁷⁸

Weston designed the *Colfax* specifically so it could operate in the Skunk River. The craft's flat bottom and four-inch draft was ideally suited for a river that was far too shallow for row boats with a conventional hull design. For movement the boat used stern mounted paddlewheels, which operated in much less water than a propeller. Although less powerful than a propeller, Weston used paddlewheels because they better avoided unseen snags and could still power the boat in close proximity to the sand shoals that often obstructed the river's flow. In essence the *Colfax* operated like a miniature rear-wheeled paddle-steamer akin to Mississippi River folklore.⁷⁹



Image 25: "Scene On Chaquaqua Or Skunk River," Two women and one man in a rowboat on the Skunk River, circa 1910. Recreation on the Skunk was not limited to hunting and fishing, as many gatherings focused on relaxation and involved entire families.

"Scene On Chaquaqua Or Skunk River," from Weaver, ed., *Past and Present of Jasper County*, 272.

⁷⁸*Colfax (IA) Clipper*, "Cold Facts," September 16, 1909.

⁷⁹*Colfax (IA) Clipper*, "Cold Facts," September 16, 1909.

Conclusion

In 1881, a farmer in Jasper County observed that in recent years the landscape around him had changed dramatically. He recalled that in 1870 livestock still roamed freely and prairie grass dominated both the uplands and lowlands. By 1881, the cattle grazed in pastures, and farms once “open to the road” were fenced off to separate one farmer’s private property from another. Cultivation had transformed all the upland prairie grass to row crops, and by 1881 the only place one could find any “wild grass” was down on Skunk River bottom. He ended his observation by saying, “Such is the mark of progress.”⁸⁰

“The mark of progress,” for that anonymous farmer was the transformation of the landscape from “wild” wet prairie to “improved” farmland capable of growing large amounts of grain. In terms of recorded history, humans have only recently been capable of making such a mark. The riparian features of the county’s swamps, sloughs, marshes, glades, muskegs, and swales made transforming the lowlands very difficult. Only after the region was thoroughly settled did human agency impact the land to a degree that an anonymous farmer could observe the many marks of progress around him.

Satellite imagery proves that the Skunk River’s appearance is much different today than it was prior to channelization.⁸¹ Once meandering through a wooded bottomland for over forty miles, the river now travels a course only twenty-seven miles long and is hemmed in by farmland for most of the way. Tile drains, first ceramic and now plastic, keep moisture levels tolerable enough for growing crops in the bottomlands, unless of

⁸⁰*Newton (IA) Journal*, “County Notes: Wild Cat Items,” September 22, 1881.

⁸¹All distance measurements used in this project were gathered electronically from *Google Earth*. The author measured changes in the river’s course by overlaying nineteenth century plat maps of Jasper County on top of the current imagery. URL: www.earth.google.com. Accessed continuously between August 2010 and May 2012.

course they are inundated by excess water drained from the uplands, such as during the major floods of 1993 and 2009.⁸² Pike and muskie have been replaced by large numbers of catfish and carp, and the festive clubhouse gathering is a thing of the past.

Riparian environments like the Skunk River bottom were the last areas of the prairie to be transformed, or marked, by human progress. The transition from prairie to farmland is so complete that one seeking a look at the wet prairies viewed by Father Charlevoix in 1720 will find only disappointment in the riverbottoms. In fact, the defining features of a wet prairie, swamps and really tall grass, were all but phased out over a century ago. Several generations have passed since environmental diversity of the Jasper County landscape was actively noticed, which is reflected on a much larger scale by widely accepted perceptions of the Midwestern landscape as a vast expanse of environmental uniformity.

The incredible profitability of commercial agriculture ensures that human manipulation of the wet prairies will continue indefinitely, but that is only the latest chapter of a much longer story. The narrative presented in this project shows that human interaction with the wet prairies has changed significantly over time, and that legal and technological complexities of drainage enhanced the ability of humans to manipulate the wet prairies, which only recently reached a historically significant point.

Swamps were drained, rivers were straightened, and new lands were cultivated, but no matter the incredible amount of human energy needed to make that happen, the landscape still retained some of the very features that people sought to eliminate. Because

⁸²Based on the high degree of manipulation placed on the environment by humans, viewing natural disasters as an act of Providence or beyond control is a “convenient evasion” that fails to recognize human involvement. Ted Steinberg, *Acts of God: The Unnatural History of Natural Disaster in America*, 2nd edition (New York: Oxford University Press, 2006), xxiv-xxv.

of the major disturbances they impose on human life, seasonal floods are perhaps the most readily observed of those features. Despite drainage efforts, laws of physics will ensure that excess water follows the path of least resistance to the lowlands. The cyclical change of seasons dictates that rainfall varies from month to month, and occasionally lowlands are subject to overflow.

The most important source for measuring environmental change over time is the Skunk River itself. There is no question that the wet-prairies of Jasper County experienced major alterations on account of commercial agriculture, but it is also true that some environmental attributes have abided throughout recorded history. Riparian features of the wet prairies that remain visible in the twenty-first century are historical relics that connect the present with a complex past, and one seeking evidence of that story need only look between the bridges in the nearest riverbottom.

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APPENDIX A: CHRONOLOGICAL LIST OF NEWSPAPER ARTICLES

Newspapers Referenced

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Newton (IA) Daily News. "Big Ditcher At Work." May 28, 1906.

Newton (IA) Daily News. "Picnic at Moffitt's Grove." June 27, 1906.

Newton (IA) Daily News. "Club House Party." July 6, 1906.

Newton (IA) Daily News. "Young Folks Picnic at Moffitt's Grove." July 11, 1906.

Newton (IA) Daily News. "Big Catch Expected." July 19, 1906.

Newton (IA) Daily News. "Century Club Picnic at Moffitt's Grove." August 17, 1906.

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Newton (IA) Daily News. "Club House Broken Into." May 29, 1907.

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Newton (IA) Daily News. "Work Resumes on the New Skunk River Near Colfax Today." October 1, 1912.

Newton (IA) Daily News. "Buys Land From Newton Hunting and Fishing Club." October 4, 1912.

Newton (IA) Daily News. "Polk County Will Straighten Out Skunk River." October 8, 1912.

Newton (IA) Journal. "May Straighten The North Skunk River." November 27, 1912.

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Newton (IA) Daily News. "Skunk River Ditch Will Be Straightened Through Mahaska County: New Sharon Real Estate Man Investigating Cost of Ditch." November 24, 1914.

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Newton (IA) Journal. "Will Begin Survey For Mahaska Ditch." January 19, 1915.

Newton (IA) Journal. "Finishing up Ditch Matters." February 3, 1915.

Newton (IA) Journal. "Extends Time to Company On South Skunk Ditch." February 5, 1915.

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Newton (IA) Journal. "Occupants of Motor Boat Sleep On A Dirt Pile." August 4, 1915.

Newton (IA) Journal. "High Waters in Skunk River." September 27, 1915.

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APPENDIX B: CHRONOLOGICAL LIST OF DRAINAGE RECORDS

All records from *Drainage Records Book No. 1*, Jasper County Board of Supervisors, Recorder's Office, Jasper County Courthouse, Newton, Iowa.

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"Appointment of Appraisers," filed September 1911, *Drainage Records Book No. 1*, 107-108.

"Report of Appraisers on damages and acreage in Skunk River Drainage District," filed October 1911, *Drainage Records Book No. 1*, 109-111.

"Damages Allowed," filed October 1911, *Drainage Records Book No. 1*, 113-115.

"Notice of Appeal," filed November 1911, *Drainage Records Book No. 1*, 119-122.

"Appointment of Commissioners," filed November 1911, *Drainage Records Book No. 1*, 124.

"Notice to Contractors," filed November 1911, *Drainage Records Book No. 1*, 125-127.

"Specifications," filed November 1911, *Drainage Records Book No. 1*, 129-132.

"Proposal, Contract, Bond, and Specifications," filed December 1911, *Drainage Records Book No. 1*, 144-147.

"Dismissal," filed January 1912, *Drainage Records Book No. 1*, 149.

"Contract For Sale of Drainage Bonds," filed January 1912, *Drainage Records Book No. 1*, 150-151.

“Appointment of Commissioners,” filed December 1911, *Drainage Records Book No. 1*, 152.

“Report of Classification Commission and Appraisers,” filed April 1912, *Drainage Records Book No. 1*, 156-175.

“Objectors and Objections to Classification & Assessment,” filed May 1912, *Drainage Records Book No. 1*, 183-185.

“Resolution,” filed May 1912, *Drainage Records Book No. 1*, 190-193.

VITA

Joseph W. Otto was born near the town of Colfax in Jasper County, Iowa in 1983. He received a K-12 education from the Colfax-Mingo public school system, graduating from high school in 2002. That year Joseph enrolled as a freshman at Iowa State University in Ames, Iowa, and in 2007 graduated from that institution with a Bachelor's degree in History. In 2009, he earned a Master's degree in Teaching from East Carolina University in Greenville, North Carolina. In 2010, Joseph enrolled as a graduate student at Appalachian State University in Boone, North Carolina where he wrote his Master's thesis, "Subject to Overflow: The History of Drainage Districts in Jasper County, Iowa." In August 2012, Joseph graduated from Appalachian State University with a Master's degree in History and accepted a teaching assistantship from the University of Oklahoma in Norman, Oklahoma. In the fall of 2012, Mr. Otto will begin work toward a Ph.D. in History at that institution, where he will focus on American Environmental History.

Joseph is a member of the Agricultural History Society. His parents are Mark and Gaylene Otto of Colfax, Iowa. He has two brothers, Adam Otto of Newton, Iowa, and Lucas Otto of Colfax, Iowa; one sister, Jacqueline Otto of Colfax, Iowa; and one sister-in-law, Noreen Otto of Newton, Iowa. Joseph is an avid canoe paddler, and has paddled many miles of the channelized sections of the Skunk River in central Iowa.